‘REVIEWING THE CHALLENGE FOR ABLE STUDENTS’: A PARTICIPATORY ENQUIRY EXPLORING THE NATURE OF PEDAGOGY THAT CAN ENHANCE COGNITIVE ENGAGEMENT WITH HOMEWORK.’

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Contents

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ABSTRACT

This thesis investigates and analyses the level of challenge for able students in an 11 - 18 Academy. It is addressed from my position as the Principal of the case study Academy and a novice researcher. Eight teachers who formed the Teaching and Learning group within the Academy participated in the study, as part of a community of practice with an interest in the issue addressed and the research process. The study focused on concerns arising from Learning Walks and Ofsted feedback about the perceived lack of challenge for able students. Using a three layer action research methodology, the views and practices of staff and students about challenge in ILTs (Independent Learning Tasks) were explored. An initial brainstorming activity was followed by questionnaires, lesson observations and focus group sessions with a sample of 100 students (Years 7, 9, 10 and 11). At the close of the first layer of research, data analysis revealed a range of levels of challenge in different subject areas, and from these a Year 10 Geography group was selected, with the support of the teacher. The second action research layer involved the Geography teacher and 15 Geography students who had identified a lack of challenge in their ILTs. This shifted the focus of the research to consider the cognitive challenge incorporated into tasks, focusing on thinking skills and questioning techniques. The third and final action research layer resulted in a newly developed, collaboratively-constructed 'student friendly' thinking skills analysis which provided powerful and formative insights to 'label' challenge. The teacher responded reflexively to the outcomes by trying out a redeveloped approach to ILTs (homework) and questioning techniques within the Academy. The findings from this investigation suggest that, cognitively challenging, problem-solving tasks, co-constructed with students to include opportunities for Socratic questioning provide for greater challenge in the classroom. Finally, the benefits to be gained from establishing a research community where the Principal is the lead researcher, include an increased emphasis on staff as change agents and the critical contribution of student voice in pursuit of challenging teaching and learning.

Chapter 1

INTRODUCTION

1.1 Background to the research

Education for me has always been a passion. I recollect very positive and stimulating learning during my primary education but the move to the secondary phase reduced my experience to little more than rote learning with limited challenge. Too many lessons rigidly required note-taking from the blackboard, offering few opportunities for interaction with the teacher or my peers. As an able student (based on allocated grouping, 11+ success, progress and regular affirmation from teachers) I suffered boredom and seven years of secondary education which generally failed to inspire or motivate. The education of able students in maintained (state) schools since the introduction of comprehensive schools, as measured by HMI/Ofsted has often been described as the 'Cinderella' of education provision (Eyre, 2001, p.1). The HMCI Annual report (2005/2006) noted that teaching and learning for the most able students was at least satisfactory in the very large majority of secondary schools inspected and in six out of ten they were good or outstanding. The report also noted that there was still work to be done highlighting the areas of significant weakness as the use of assessment for learning and planning for challenge in the classroom (DCSF, 2007). The importance of consistently engaging children in challenging work is echoed by Winebrenner (2009, p.2):

> Each time we steal our students' struggle by insisting they do work that is too easy for them we steal their opportunity to have an esteem-building experience. Unless kids are consistently engaged in challenging work, they will lose their motivation to work hard.

This effect upon motivation, and ultimately boredom with work that is undemanding or has been met before is not uncommon.

Research carried out by Ofsted (2002), suggests that my own experience, some thirty years later, is still fairly commonplace. It appears that secondary schools even now, do not build effectively on aspects of learning successfully achieved in primary school, particularly creative, group orientated and theme based approaches which provide the essential challenge needed by able students. It is difficult to recollect examples of lessons where I experienced rich questioning that challenged my thinking and moved beyond simple recall of facts, and any independent tasks were always tightly structured

to achieve a particular outcome. Therefore, it is this personal desire to develop challenging learning through appropriately structured tasks that develop thinking skills, encourage engagement and nurture enjoyment in learning, which stems from my own experience of secondary education.

My teaching and learning journey began in 1985, in a Roman Catholic Secondary School culminating two decades later in my appointment as Principal of Q3 Academy in Sandwell. Leading an academy has resulted in increased accountability, with student attainment subject to growing scrutiny by a range of stakeholders who will often see a large cash injection as the solution to underperformance, expecting to see a quick return on the capital investment. The focus for me, as a leader of learning, continues to be on every child achieving regardless of 'life history'. Without exception, each of the schools I have taught in has had groups of students destined to fail for a variety of reasons. One of the most worrying causes surfaced within the groups of able students who were clearly lacking in motivation. In the majority of cases the underlying reasons for poor motivation stemmed from a lack of challenge in their learning.

The challenge I faced was immense but the solution lay at the heart of the quality of teaching and learning experiences proffered for students. The process of reconstructing the way students learn and strategies used by their teachers to plan, organize and scaffold quality tasks needs to evolve to provide challenging experiences for the most able. There is a perception of 'low aspiration' in the wider catchment area of the Academy, that is, Sandwell. It is often commented that people who are born and bred in the area very rarely want to venture out and try new life experiences. Low aspiration can be difficult to overcome and the Academy has a responsibility to tease out the contributing factors and maximize every opportunity to deal with this issue.

The decision to embark on the Doctoral programme was fuelled by my motivation to engage in depth with a key issue impacting on the success of the 'able' students within the Academy, notably the level of 'challenge' in learning tasks offered to these students. The Challenge Review Report (2008, p.10) refers to the importance of promoting engagement (or the use of curriculum materials and activities designed to enhance motivation and subsequent engagement), which becomes an integral part of constructing challenge in the curriculum. During observations I regularly experienced teachers asking

closed questions in search of information in the form of predetermined short answers, usually pitched at the recall or lower cognitive level – an approach counterproductive to students articulating their individual thoughts (Chin, 2007).

Within the Academy, able students are grouped together in the 'Accelerated Pathway' (one of three pathways which also include 'Outlook' and 'Breakthrough') based on prior data on entry and predicted examination grades. The 'Outlook' pathway caters for students who should be able to achieve a profile of GCSEs above grade C but may also include students with a lower profile who have the capacity for improvement. In labelling this group 'Outlook' it is assumed that the cohort will have a positive view of their own development and progress, seeking to improve and demonstrate the potential to increase their performance. The 'Breakthrough' pathway embraces students who have learning difficulties and need targeted support and as the title implies there is ambition for the cohort to rise above barriers to learning, embracing the opportunities for progression.

1.2 Evolving as a researcher

In attempting to deal with the lack of challenge for able students I needed to reinforce high aspirations and expectations amongst the staff, and encourage continuing professional development. A key element of teacher development is the opportunity to engage in research into their own practice. The overarching ethical issue in teacher research involves the relationship between researchers and subjects, and the view that research ethics is a matter of protecting human subjects is too conveniently innocent of existing power relations within most research settings (Clarke and Erickson, 2003). People become the "gatekeepers of what counts as power and who should be powerful, and of the rule-making procedures for deciding these things" (McNiff and Whitehead, 2010, p.216). Considering this viewpoint, as the 'Principal' of the Academy and the lead 'Teacher-Researcher' there is the potential for some element of trepidation from both staff and students. This position presents tensions – how many staff will unveil their true feelings or indeed pursue their beliefs rather than supporting those that I hold? A collegiate approach to engaging the staff would ease their acceptance of my role as researcher, and as they began to spend more time working with me as a small group they would feel empowered to 'voice' their reflections of the research process.

A collaborative and inclusive approach was critical to the planning stages of the research process. I involved eight staff who had formed a Learning Community which would play an integral role in reviewing the use of the research tools and the outcomes of the project. The Learning Community is composed of 'like-minded' staff, passionate about improving 'challenge' in the learning process. I had initially considered adopting an appreciative enquiry approach with a view to looking at the positive aspects of the Academy's work and then establishing strategies to strengthen the existing good practice. My thinking moved towards an open practitioner enquiry which then became more cyclical as I reflected on developments, and decided to focus on action research which becomes an "enquiry by the self into the self, though it is always done in company with other people" (McNiff, 2010, p.5).

A further concern about my role as researcher was the potential response from the students. I hoped they would reflect on their learning experiences in a true, mature and logical manner – this was perhaps more difficult than I imagined as emotions are likely to supersede the reality of the classroom environment. In this respect, I agree with the opinion citied by Mead (2008, p.632) who refers to potential tensions as "a systemic property, an ongoing phenomenon to be actively managed by building a network of relationships between the various stakeholders". The relationship between power and knowledge has the potential to impede the research process. However, because power and knowledge are inextricably linked, that is, one does not exist without the other … "through action knowledge is created and analysis of that knowledge may lead to new forms of action" (Gaventa and Cornwall, 2008, p.172). By helping the students to understand that my own engagement in learning had spurred me to look at their classroom experience from a platform of wanting 'the best' for them helped remove potential obstacles. Burrell and Morgan (1979) identify knowledge as hard, objective and tangible demanding of researchers an 'observer role' together with an allegiance to the methods of natural science. They also argue that knowledge is personal, subjective and unique, imposing on researchers an involvement with their subjects and a rejection of the ways of the natural scientist. These views resonate with the approach I decided to take when working with the staff and students, a process which would engage and motivate both groups to contribute information, ultimately leading to a change agenda. The need to engage local stakeholders, particularly those traditionally excluded from the research

process, in problem definition, research processes, interpretation of results, design for action and evaluation of outcomes is essential (Bradbury-Huang, 2011). By taking this approach, working with staff and students, I stepped beyond what has been labelled 'applied research' into the democratization of research processes, programme design, implementation strategies and evaluation. As a researcher it was important for me to show concern for the individual participating in research, to get inside the person and to understand from within. Within the interpretive approach the "imposition of external form and structure is resisted, since this reflects the viewpoint of the observer as opposed to that of the actor directly involved" (Cohen, Manion and Morrison, 2008).

1.3 Planning the research process

To rely heavily on statistical procedures burdened by large amounts of quantitative data would only serve to provide a barrier between myself as a researcher and the intended audience. This 'barrier' was removed through the open and transparent approach adopted, and the positive relationship nurtured with the Learning Community. A quantitative approach at the start gave a quick overview of what people were thinking at the time, providing the basis for extending the research after discussions with the staff about the initial findings. With the foundations in place I then adopted a qualitative style, gaining an in depth view of the issue of challenge. The quantitative use of a questionnaire facilitated passive engagement whereas the focus group sessions enabled a participative approach, both providing different relationships with the participants. By empowering the staff I was able to foster creativity, determination, enthusiasm and motivation in order to influence the power/knowledge relationships (Botelho, Kowalski and Bartlett, 2010). This was not a simple process. The essential groundwork leading to the research helped to lay the foundations for a constructive and trusting basis from which to launch the project. The staff were aware of my reflective practice within my own teaching – this had been shared as part of an earlier discussion during a meeting of the Learning Community. As a teacher of an 'Accelerated Business Studies' group I too had faced the challenge of inspiring a very able group of students. I had trialled a number of strategies to engage, motivate and challenge and these I had willingly shared with colleagues. As a fellow practitioner I gained the confidence of the staff – I shared their frustrations and was willing to admit that I personally did not have all of the answers but had the desire and passion to work collaboratively to find solutions and try new

strategies. Joint planning is one area where new ideas and different approaches to learning can be discussed; when followed by observations through a process of lesson study, staff can engage in a dialogue focused on the particular area for development which in this case is ‘challenge’.

The HMI Monitoring Report (2010, p.3) for the Academy confirmed:

> The best lessons sustain a rapid pace and sharp focus that engages all the students. This is most evident when: planning is precise and ambitious; activities are imaginative, varied and skillfully managed. A significant number of lessons observed were only satisfactory. The most common limitations were in planning, when the intended learning outcomes lacked challenge, or when teachers had not considered how different students would learn.

This highlights my determination to engage in research which will have an impact on the students’ life chances, lifting aspiration and expectation. The Academy has a core of very talented staff who can deliver the challenge needed; however there are still teachers who either do not have the strategies embedded or lack the aspiration for their students. The findings from the report strengthened the drive on standards and the need to ensure sufficient levels of challenge to cater for the diverse groups within the Academy. The influence of teachers and the challenge provided to able students through Independent Learning Tasks (ILTs) are key factors to be addressed. The results from the initial questionnaires and comments from parents about the content and challenge provided by ILTs have moved the research in this direction.

My own ability to be reflexive will prove essential to the ongoing progress of the research. Reflexivity is about "acting on reflections, rather than just proposing what you could have done or might do next" (McGregor and Cartwright, 2011, p.276). The levels of reflection referred to in Table 1.1 echo my own process in this research.

Level	Reflective Level
1st	Being able to identify and describe a critical incident or happening. The *what* of a situation.
2nd	Being able to explain *why* you did it the way that you did or *why* the critical happening arose.
3rd	Being able to recognize there were *different ways* to act in the critical happening or incident.
4th	Being able to devise a way of *finding out* whether one approach was better than another leading up to that kind of critical incident.
5th	Comparing evidence to decide *which approach* worked best, to avoid such an incident arising again, and *why*.

Table 1.1 Deepening thinking to develop reflexivity (McGregor and Cartwright, 2011, p275)

A useful way of thinking about action research is that it is a strategy that helps you live and act in a way that makes you feel good. "It helps you to live out the things you believe in (your values); and it enables you to proffer well justified reasons every step of the way" (McNiff, 2010, p.6). The reflective questions proposed by McNiff (2010, p.8) will be answered as the research unfolds:

- Do you see the relevance of action research for your practice?
- Do you want to evaluate your work? Why?
- Can you see how your practice is linked with your values? How?
- What do you want to find out? Why?
- Do you see any challenges ahead?

To ensure change happens and to tackle any challenges arising from this process I had to have staff on board throughout. Several action research layers were needed to enable critical analysis and evaluation as the information evolved. This facilitated essential time for reflection. My own ability to be self-critical assured a process of reflexivity moving the research through a series of levels in tune with the process contained in Table 1.1.

1.4 Emerging findings

The early data gathering exercise revealed a lack of challenge in the setting on ILTs (homework) which is not a new phenomenon but rather a continuing issue that has failed to gain a resolution. From experience a key consideration of parents in their selection of a secondary school is the frequency and volume of homework set. There is perhaps an element of status attached to the amount of homework a child receives and if it is insufficient a school is often unfairly judged as 'not good'. Sharma (2008) refers to a change in direction with the pendulum swinging back, and this traditional form of home

study no longer being seen as a panacea for raising standards, with many headteachers beginning to adopt a lighter touch. With increasing pressure on family life homework can provide an added burden and there is also the issue of parity: one student may have supportive parents who are willing and able to assist with homework, whereas a child from the same class may have no back-up provided at home.

It is also worth considering how culture impacts on views about homework. Complaints to the Academy about lack of homework (i.e. lack of Independent Learning at home) is more frequent from our Asian Sikh Indian parents than any other group in the Academy whereas concerns expressed by Afro-Caribbean parents are very rare. The nature of concerns from British White parents is variable including issues with 'too much', 'not enough' or 'the Academy is for learning – not our home'. My perspective on this issue is that both culture and social positioning impact on the value placed on homework. Not once has a concern centred around the quality or challenge of the work set, it is usually focused on quantity or the frequency.

Independent Learning Tasks have replaced the traditional homework given (this change was intended to prompt staff to consider the nature of tasks set, in particular the level of independence given to students) and should be designed to stretch all students including the most able. The change of title indicates the intention of the re-focused homework, but there was initially a very limited change in approach to the quality of tasks set. The way Independent Learning Tasks have been designed has constrained the progress of the Academy's able students. The developing Learning Community within the Academy has piloted more innovative approaches to Independent Learning including refocusing questioning and integrating thinking skills.

1.5 The role of the Learning Community

The Learning Community constituted eight staff members who were willing to support the Action Research approach that I managed and designed by administering questionnaires, conducting joint observations of lessons and engaging in dialogue about what constitutes challenging ILTs. This approach was consistent with the view expressed by Reason and Bradbury (2001 and 2006) which suggests that engaging participants in research – sharing some autonomy with them – redefines the knowledge

production process and outcomes in ways consistent with the quality standards of action research and its goals of “participation and democracy” (Ospina, Dodge, Foldy and Hofmann-Pinilla, 2008, p.424). The experience within the group varied from ‘new to the profession’ to ‘middle leadership’ with overall co-ordination managed by an Assistant Vice Principal. David Hopkins worked with the group in its infancy to help create a ‘Community of Learners’ paving the way for me to take a lead with the group in the drive for continued improvements in the quality of learning and teaching.

A decade earlier, during his annual lecture ‘Teaching as a Research Based Profession’, Hargreaves (1996) controversially suggested that current educational research was poor value for money, and that it inadequately served the teaching profession. His somewhat negative view about the value of academic research has changed since 1996. As some staff still struggled to see the relevance of research, I engaged David Hopkins to work alongside Academy staff to ‘kick start’ the Learning Community. This supported and encouraged a change in attitude towards the value of research. An increasing number of staff have since embarked on Masters Programmes of Study and a research community is beginning to evolve within the Academy as staff cascade the outcomes of their work in a useful ‘practitioner-researcher’ format.

The Learning Community is developing into a core group of researchers each being part of a smaller group with a specific area of interest to be pursued which is very similar in nature to the “Daisy Model” established by teachers in a Brazilian University (Botelho, Kowalski and Bartlett, 2010, p.192). In this model each group leads a petal or mini-project group, and uses the core group for feedback and critique of progress. This group have led staff inset days using the theme of ‘challenge’ to bring new energy and a variety of strategies into classrooms. This ‘bottom up’ approach has created an empowering context for staff to become participants in a growing community of practice across the Academy. They are beginning to think more reflectively, and to direct their own change processes (Stacey and Griffin 2005, p33), for example, with the introduction of ‘Hot Lessons’ which provide an ‘open door’ to classrooms during a specified period of the day. Staff are able to visit lessons and complete a postcard highlighting the positive aspects observed. Before the postcards are sent to the member of staff they are analysed and the findings shared during best practice staff briefings

The group's developing interest in research has led to new ideas, new thinking and new energy which is constantly being cascaded across the Academy. This sharing of control with staff has made the process "more democratic, a worthwhile aspiration in itself" (Ospina, Dodge, Foldy and Hofmann-Pinilla, 2008, p.425). The value of school based teacher research has been acknowledged by McIntyre (2005) and Zeichner (2003) and further supported by Wilson (2009. p.4) in her description of research into practice which she claims is:

> …about challenging beliefs and values through encountering new ideas from other teachers and codified research knowledge, so that well-informed judgements can be made in classrooms which ultimately increase the well-being and attainment of every student in each class.

The group's enthusiasm for the research has prompted ideas for accelerating this aspect of its teaching and learning remit. Successful change is pumped from the heart of an organisation which is its staff and students not simply the senior managers. The basic assumption that only top management can cause significant change has the potential to be deeply disempowering (Botelho, Kowalski and Bartlett, 2010), and change needs to come from the professionals themselves in order for it to be meaningful and sustainable.

1.6 The developing notion of Action Research

If professionals are to commit to change, it is important to select an appropriate form of research which will benefit both teachers and students in their teaching and learning. Action research is a specific method of conducting research by professionals and practitioners with the ultimate aim of improving practice and bringing about change (Koshy, 2010), which resonates with my aim for this study, 'to enhance the learning of able students by providing greater challenge'. The cyclic nature of this process enables continuity in research – we should always be seeking ways to improve practice. Action research is:

- practice based
- about learning
- about creating knowledge
- values laden
- educational
- collaborative
- critical and risky
- always political

This summary by McNiff (2010, p.34) provides a commonsense and realistic view of the process of action research and the reference to the process as 'always political' links to the power relationship, that is, the Principal with teachers and students. I am aware that by generating an appreciation by staff and students of 'being involved' in shaping improvements in teaching and learning, this relationship can be managed and gradually nurtured.

The practical, problem-solving nature of action research makes this approach attractive to practitioner researchers like myself (Bell, 1999). It is action "disciplined by enquiry, a personal attempt at understanding while engaged in a process of improvement and reform" (Hopkins, 2002, p.41). This view supports the approach I intend to take – my research has to make a difference to the life chances of students otherwise the findings will simply be yet another report on the bookshelf. Reason and Bradbury (2008, p.3) help us in trying to locate action research as a unique paradigm:

> For me it is really a quest for life, to understand life and to create what I call living knowledge – knowledge which is valid for the people with whom I work and for myself.

This notion not only affirms the importance of the Learning Community within the Academy but also acts as a reminder to spread the work more widely across the whole cohort of staff. By engaging the willing 'few' in the early stages of research it prepares the path for cascading to the wider group of staff.

Elliott (2006, p.170) differentiates between 'educational research' which constitutes a form of commonsense inquiry rather than a science and 'research on education' which aspires to produce 'objective knowledge' about practice in classrooms and schools. It is my intention to capture the best practice in the Academy's classrooms and ensure that teachers are sharing strategies that effect challenge. Educational action research can also be viewed as "an ethical inquiry into the ways educational aims and values can find practical expression in the activities of teaching and learning" (Elliott, 2007, p.231). It engages teachers and their collaborators in a form of practical reasoning that Aristotle called phronesis, where the ends that constitute the internal goods of a practice and the means of realizing them in action are objects of joint reflection and inquiry. This engagement results in greater value being placed on the research which ultimately leads to an effective change process.

The engagement of the Learning Community has resulted in the members taking an increasingly reflective approach to their practice thereby removing any pre-existing barriers to the use of action research as a change agent. They have been receptive to the engagement of students removing the potential risk referred to by Becker (1998, pp. 90-91) as "the hierarchy of credibility" where he refers to the way "knowledge" in organisations like schools is hierarchically structured (Elliott, 2007, p.233). In this respect teachers are seen to have more credible knowledge about what goes on in classrooms than their students. Through my own research I have been able to foster a confidence in the staff to devolve some degree of responsibility to students to be partners in the change process.

My view is that action research does not start from a desire of changing others 'out there', although it may eventually have that result, rather it starts from an orientation of change with self and maybe then others (Reason and Bradbury, 2008) depending on the researcher's role in an organisation. In conducting my own research, a combination of both quantitative and qualitative methods were selected. The questionnaires provided an early insight into areas which could be deemed to provide challenge. The use of focus group interviews allowed for qualitative data to emerge which provided a deeper insight into the impact of various activities on the level of challenge encountered by students. The relationship between the two methods proved critical in that the quantitative data opened the door to the concerns about challenge and highlighted Independent Learning Tasks (homework) as an issue for Year 10 students. By moving to a qualitative, participatory approach, I accessed rich data and succeeded in getting to the root of the issue relating to the lack of challenge.

In the context of practice, as new information unfolded a cyclical approach to the research was deemed necessary. Questions arose that called for the gathering of certain kinds of qualitative data, while at other times the gathering of quantitative data proved more appropriate (Elliott, 2006). It is my intention, as identified by McNiff and Whitehead (2010, p.8), to draw upon the three main purposes of all action research:

1 creating new knowledge and making claims to knowledge;
2 testing the validity of knowledge claims;
3 generating new theory.

I aim to keep an open mind and share new understandings about how our most able students can be more appropriately challenged (via particular kinds of homework activities/tasks designed to scaffold thinking at higher levels) through the use of effective Independent Learning Tasks.

As the Principal, I am the lead teacher and therefore need to keep observing, learning, reflecting and ensuring improvement is integral to the team I lead, and to our family of students. Self-reflection is pivotal to the process allowing me to question what I do and why. This study has allowed me to discover whether the most able students in the Academy are being challenged to achieve their best. Critical areas such as thinking skills, questioning techniques and task design have emerged as levers for change.

1.7 Research issue

I began the research with a desire to look closely at the challenge experienced by able students:

> Reviewing the challenge for able students: a participatory enquiry exploring the nature of pedagogy that can enhance cognitive engagement with homework.

The following questions arose at different points as I began to explore the research issue, guiding the data collection and analysis.

1. *What do able students perceive to be 'effective challenging activities?*
2. *What do teachers of able students perceive as 'effective challenging activities?'*
3. *How far do the views of students and staff compare?*
4. *How do teachers effectively enact challenge in Independent Learning Tasks (ILTs) where achievement is already high?*

Chapter 2

LITERATURE REVIEW

2.1 Introduction

This chapter provides a critical reflective review of the key texts and ideas that shaped my understandings as I progressed through the action research. From these I began to draw out ideas on the practical issues around creating a more challenging curriculum offer for able students.

I start by reviewing literature relating to the able child and then consider the use of the term gifted and talented, other forms of labelling and the associated problems. The place of child development is also reviewed considering the arguments relating to the innate versus social debate. This then provides the basis for looking at the classical theorists: Piaget and Vygotsky. The Piagetian approach (1972), which does not appear to subscribe to children being able to solve problems beyond their developmental stage, is compared with Vygotsky, who conversely sees appropriate scaffolding in a socially dominated environment, providing the platform from which to accelerate the learning process beyond the Zone of Proximal Development (ZPD) (Moll, 1990). Vygotsky' s theory (1978) links well to the 'challenge' debate in that the scaffolding and mediating of learning tasks pushes children out of their comfort zones and into new territories of advanced learning. In comparison to the longstanding views of the two theorists, the arguments for the place of neuroscience in the challenge debate are considered. I then review strategies for scaffolding learning as a means to providing increased challenge in the classroom. Thinking skills, questioning techniques and task design form the basis of this appraisal.

Over the last 100 years thinking in this area has shifted from how the individual performs to considering how learning can be socially engineered within groups. I intend to draw on the existing literature from a number of angles including definitions of 'able' and the origins of the term 'gifted' first introduced by Galton (1896 as cited in Simonton, 2003). The advent of the 21st century established an individualistic human capital approach to creating the educational conditions in which 'giftedness' might best be developed. Researchers such as Vygotsky (1978) and Piaget (1972) laid the foundations in this area

of research which is echoed by Eyre (2011) particularly in the area of human capital, which I intend to explore as I seek to effect change in the design of learning for more able students. I will contrast and compare the work of Piaget (1972) and Vygotsky (1978) because they offer theoretical frameworks against which to judge the development of able children, and will suggest caution with regard to the use of IQ measures. Rogoff's planes of analysis resonate with Eyre's (2011) view linked to the social nature of learning and offers an interesting insight into different dimensions of cognitive development, particularly when looking at the intra versus inter nature of psychological thought. Existing practice in the Academy will be reviewed in an attempt to realise what could be better, using an action research approach.

A succession of reports (HMI, 2010; Ofsted, 2005; 2009; 2010; 2011) have indicated that children in our schools are often insufficiently challenged by the work they are set, suggesting that "there are not enough opportunities for enquiry through research, discussion, collaboration and allowing pupils to use their initiative" (Ofsted, 2010/11, p.52). The Government wishes to ensure that schools provide challenging and stretching educational opportunities for all pupils, including the most academically able and is introducing a new set of teaching standards, with a clear expectation for the first time on the need to support and challenge high ability pupils (DFE, 2012). My research will attempt to establish why able students are not sufficiently challenged in the Academy. Is the teaching appropriately challenging for able students? Is there a concern that challenge provided through group tasks can lead to control problems in the classroom? Are teachers in the Academy mediating cognitive development through questioning and learning tasks? I will also review how 'thinking skills' contribute to increased challenge for able students in the learning process and look specifically at how this relates to independent learning tasks (homework) and questioning techniques.

2.2 The able child

> It seems that the gifted and talented population is a complex one in terms of their social and emotional abilities profile. On one hand, they may have increased leadership skills, be able to work in an independent way, be self-critical and able to motivate themselves; the gifted and talented often have a great ability to empathise with others, are sensitive, dedicated and have a great sense of justice. On the other hand, they are often perceived as being perfectionists, isolated, over-reacting, difficult individuals who find it hard to handle their difference and create a

> healthy social life. It's all about difference, actually, and how both the person and the environment encounter this difference *(*Emmanouilidou, 2007).

The argument put forward by Emmanouilidou (2007) points out the complexity of different developmental journeys highlighting the absence of a simple relationship between giftedness and the manner in which a child develops. This provides a good starting point since the wealth of literature does not appear to offer a universally agreed definition of what it means to be an able child. Gifted Kids.ie (2012) offer a simplistic view suggesting an able child learns things a little earlier, faster, better and differently. Many writers in this field focus on intellectual ability including the classical authors such as Piaget (1972), Vygotsky (1978) and Bruner (1977) whilst others highlight specific academic aptitude (Maltby, Day and Macaskill, 2007) or talent (Teare, 2001; Dweck, 2012) but, most would argue that there are a much broader range of characteristics which provide a clearer indication of a child who is highly capable of learning (Reis and Renzulli, 2009). There is therefore no universally agreed definition of what it means to be an able child. Some accepted expressions include genius, more able, exceptional, very able, bright, virtuoso and high flyer (NCCA and CCEA, 2006). The information can be confusing particularly when references are made to specific talents or exceptional performance in certain subjects or disciplines.

2.3 Gifted and Talented

An able child may also be referred to as gifted and/or talented. The term gifted children was first used in 1869 by Galton (2001) when he suggested potential could be inherited. He also referred to adults who demonstrated exceptional talent in some areas, for example, a gifted chemist. Terman (Maltby, Day and Macaskill, 2007) expanded Galton's view to include high IQ (Intelligence Quotient). In the early 1900s, he began a long-term study of gifted children, whom he defined as children with IQs of 140 or more. His study found that IQ alone could not predict success in adulthood. The use of IQ tests, developed from the Stanford-Binet Intelligence Scales (Terman, 2012) in the early 1900s provide an extremely narrow assessment of a young person's ability and these are potentially flawed with respect to children from cultural minorities and/or low socio-economic status groups (Davis and Rimm, 1998). The fact that such a view remains dominant, at least in England and Wales, is perhaps to some extent a legacy of the 1944 Education Act (Eyre, 2001). This act was rooted firmly in the view that intelligence was

inherent and measurable, and that those with different levels of intelligence needed different types of education. Grammar schools, secondary modern schools and technical schools were established to meet the needs of children with different levels of intelligence. The reasons for dismantling this system and the introduction of comprehensive schools were, at least in part, recognition of the system's failure (Eyre, 2001).

It is more than 100 years since Terman (Maltby, Day and Macaskill, 2007) began to move away from the view that IQ alone indicated a child's level of ability, and recent writers such as Hollingworth (2012) added to the debate believing that educational and environmental factors played key roles in the development of potential. She was more interested in how to properly nurture giftedness and how to appropriately educate gifted individuals.

Other interpretations of gifted and talented have been provided by the well recognised 'Excellence in Cities' initiative defining gifted students as having the ability to excel academically in one or more subjects such as English, Drama, Technology. Talented students on the other hand, excel in practical skills such as sport, leadership, artistic performance (Ofsted, 2005). The Council for the Curriculum, Examinations and Assessment (CCEA) (2007) used the term Gifted and Talented to describe those students who are achieving, or who have the potential to achieve, a level substantially beyond the rest of their peer group inside their particular school. A further distinction is offered by Gagne (2000) through a Differentiated Model of Giftedness and Talent. He highlighted students with potential 'distinctly above average' and further drilled down the domains of human ability to include: intellectual, creative, social and physical. Maybe the key word here is 'potential' since he believed in the power of environmental factors, claiming that being natively smart isn't enough; suggesting a child needs support and guidance to achieve his/her gifted potential (Swift, 2012).

The DSCF (2007, p.8) drill down to look at a wider profile, suggesting gifted and talented students tend to:

- Show a passion for particular subjects/areas of interest and seek to pursue them;
- Master the rules of a domain easily and transfer their insights to new problems;

- Analyse their own behaviour and hence use a greater range of learning strategies than others (self-regulation);
- Make connections between past and present learning;
- Demonstrate intellectual curiosity;
- Show intellectual maturity and enjoy engaging in depth with subject material;
- Actively and enthusiastically engage in debate and discussion on a particular subject;
- Produce original and creative responses to common problems;
- Question rules and authority;
- Have a well-developed sense of humour;
- Demonstrate growing self-determination, stamina and powers of concentration.

Five years on from the release of this list, the Government remain concerned about the performance of the academically more able students highlighting the need for increased stretch and challenge. The Scottish Government share this concern and have produced guidelines to support the teaching and learning of highly able students, recognizing the growing international commitment to a very wide concept of intelligence with multiple domains and the existence of individual profiles (Gardner, 1983; Sternberg, 1985; Renzulli, 1986). Furthermore, there is an understanding that intelligence profiles can be significantly influenced by environmental factors, alongside genetic influences (SNAP, 2012).

There is an antipathy in the UK to being labelled as gifted and talented academically, but the same stigma doesn't seem to apply to children who are gifted at sports and music. The talent, potential and drive are out there, but there needs to be sensitivity when appealing to bright youngsters (Lampl, 2007). There will be a proportion of students who are labelled either as ‘gifted’, ‘talented’ or both, but issues remain about how this categorisation is arrived at, and then how they are provided with the necessary educational stimulus to excel. The school environment provides the ideal setting to resolve the many conflicting views of how we should provide the essential nurturing to fully realise the potential of our most able students. Hollingworth’s (2012) work began to look at the importance of nurturing and the role of education, and although she laid the foundations for more research into this area it is my view that this is still in its infancy. Researchers, the Government and other organisations have striven to resolve this uncertainty and provide guidance on how best to meet the needs of able students (DSCF, 2009; DfE, 2012; NACE, 2007; NAGC 2012; Ofsted, 2009). Problems such as this are not easily solved; the programmes and ideas presented by these bodies have felt

like ‘bolt-on’ strategies rather than proactive solutions. For example, able students have been offered seminars and workshops at local universities, with no follow-up or sustainable curriculum links. What is clear, is that there is no one theory-based definition of an ‘able child’ and the use of the terms ‘gifted’ and ‘talented’ continue to be ambiguous, inconsistent and regularly used interchangeably e.g. the same person could be described as a ‘gifted sportsman’ or a ‘talented sportsman’. Lambert (2010) questions the validity and appropriateness of labelling a child in this way and calls for a more sophisticated and inclusive framework, highlighting the importance of the differences in the social environment of learning which influence (or determine) how any pupil responds to and is or is not challenged by the teaching and learning process at any one time.

Whatever label is assigned it is the development of the whole child which must be addressed:

> A child is a total entity; a combination of many characteristics. All intertwine and influence each other’ and the role of the teacher in designing challenging tasks and deep rooted questioning to stimulate cognitive development is critical (Roeper,1982, p.21).

Therefore the nature/nurture debate linked to Vygotsky (1978) and Piaget (1972) provides a strong basis to inform the design of this study.

2.4 Piaget v Vygotsky

The development of the whole child is critical when considering strategies which provide challenging learning experiences. Therefore the work of the classical constructivist theorists, Piaget (1972) and Vygotsky (1978), are relevant to my research. By comparing and contrasting their work I anticipate being able to gain a clearer insight into the earlier thinking relating to able children, and link this with more recent findings. The notions of individual constructivism and social constructivism will inform my reflections about how to support and develop higher order thinking (also known as cognitive development). Will challenge be more effective when an able child is working independently or does social interaction provide the most productive platform from which to accelerate learning? Is age the key – do children only master more complex activities as they get older?

Piaget (1972) emphasized biological maturation and the understanding of abstract concepts such as space, time and justice in the development of intelligence. He maintained that cognitive development is chronological in nature with knowledge being constructed via a sequence of behaviours or mental operations. Piaget (1972) described four stages of intellectual development: the sensori-motor, the pre-operational, the concrete operational, and the formal operational – all of which the child must pass through in chronological succession. Therefore cognitive development and thinking is enhanced as students get older, and it is the teacher's intervention through carefully crafted learning tasks which can help to develop this.

Vygotsky (1978) agreed with Piaget (1972) regarding the constructive nature of intellectual development, that is, one had to build one's own understanding through interaction and reflection on the environment. However, he also illustrated how learning is social in its origins, and rather than construct methods of cognition as an individual, the child reflectively constructs understandings through social interaction. When the teacher can design learning to scaffold and mediate tasks to push students just beyond their Zone of Proximal Development (ZPD) they are challenged to work beyond their potential. This differs from the Piagetian approach (1972) which is less malleable due to the emphasis on the individual rather than the group. Human learning therefore presupposes a specific social nature and a process by which children grow into the intellectual life of those around them (Sternberg and Pretz, 2005).

Piagetian (1972) theory suggests that children innately build ever expanding cognitive structures; however by working independently they may not understand dissonance in their learning. A Vygotskian (1978) approach would see children working collaboratively and discussing ideas to solve problems. Vygotsky (1978) discussed at length novice and expert working alongside each other so that each may forge ahead cognitively into their ZPD. He wrote about collaboration and direction, and about assisting children through demonstration, questioning, and task design but did not really specify how to scaffold learning (Moll,1990). Ratner (1998) argued that higher psychological functions actually stimulate neuronal growth in particular directions and that they create their own biological mediations. This accords with Vygotsky's position that the collaborative nature of well-structured, targeted tasks that mediate progress in cognitive development motivates the child to work beyond their potential. Vygotsky articulated that although social interaction

is important, it is when children reflect, that the social (intra) aspects are triggered (Moll, 1990).

The basic notion is that we observe/reflect on happenings both around and with us, that is, in the social environment, and our learning is deeply influenced by our interactions and the relationships we develop. Both Piaget (1972) and Vygotsky (1978) were constructivists; however they highlighted different aspects relating to learning; Piaget stressed the inner motivation of an individual to reconcile dissonance with new information (although some may give up) while Vygotsky (1978) stressed the importance of the social interaction in which the individual participates. Their contrasting views are revisited in the conclusion to the study where I also present my own opinions and reflections and those of staff and students.

A problem-solving approach to task design encourages metacognitive processes (Vygotsky, 1998) including recognising the problem; representing the problem and comparing it with others; planning how to proceed, deciding steps, resources and targets; and evaluating progress and solutions. Metacognition (Moll, 1990) enables a student to take their existing knowledge which may have been gained individually (Piagetian) and think about the relationship between what is known and new information through dialogue with others (Vygotskian). To solve problems a student will need to know how to define the problem and then select an appropriate strategy or rule. It is therefore important for the teacher to provide an appropriate level of scaffolding when designing learning tasks (Fisher, 2000).

Scaffolding could be taken to infer a 'one-way' process wherein the 'scaffolder' constructs the scaffold alone and presents it for use to the novice. It is the support given during the learning process which is tailored to the needs of the student with the intention of helping the student achieve his/her learning goals (Sawyer, 2006). Newman, Griffin and Cole (1989) argued that the ZPD is created through negotiation between the more advanced partner and learner, rather than through the donation of a scaffold as some kind of prefabricated climbing frame. There is a similar emphasis on negotiation in Tharpe and Gallimore (1988) who discussed teaching as assisted performance, in those stages of the ZPD where assistance is required. The key question here seems to be with respect to where the focus, supports, or scaffold come from. Are they produced by 'the

more capable partner' or are they negotiated? Vygotsky (1978) is unclear on this matter but appears to hint at the possibility of virtual collaboration without the physical presence of a teacher. When the child solves a problem at home on the basis of a model that they have been shown in class, continues to act in collaboration, though the teacher is not present. From a psychological perspective, the solution of the first problem is similar to this solution of a problem at home. It is a solution accomplished with the teacher's help. This help – this aspect of collaboration – is invisibly present. "It is contained in what looks from the outside like the child's independent solution of the problem" (Vygotsky, 1987, p.216). While Piaget would assume that a child does not have the mental structures to solve a problem, Vygotsky, although not definitive in his view, implies that once an example has been shared with a child, in the form of scaffolding, a solution can be reached.

The Piagetian view, which suggests children are not able to solve problems outside their developmental stage, has been questioned by Fisher (2008). He strongly suggests the need for schools to be less focused on imparting information and more in tune with teaching students to learn and think critically for themselves at the highest possible levels. The National Association for Able Children [NACE] (2007) highlights the need for students to have the skills of learning how to learn: for example, problem-solving and thinking skills; self-assessment and self-monitoring skills; questioning, recording and research skills. This is mirrored by Winebrenner's (2009) five elements of differentiated learning: content, process, product, environment and assessment. It is through differentiation that the teacher adds challenge with a focus on open-ended and problem-solving tasks. In addition, thinking skills, within the broader spectrum of cognitive development, which are enhanced and mediated through well scaffolded and mediated learning tasks, are emerging as a powerful means of engaging teachers and pupils in improving the quality of learning in classrooms (DfES, 2005).

Another way of considering how children may move beyond their ZPD is to look at Rogoff's three planes of analysis (Moll, 1990): apprenticeship, guided participation and participatory appropriation. These planes offer a developmental model of scaffolding which can be viewed as inseparable concepts reflecting different planes of focus and connect favourably to Vygotsky's theory (Moll, 1990), advocating the teacher as an active member of a student's education, providing adequate tools for learning and incorporating

group or peer learning. Having reviewed Piagetian and Vygotskian arguments (Moll, 1990) about learning from different perspectives, and work around challenge, my starting point centres around the individual versus social debate as applied to a modern classroom environment.

2.5 Neuroscience

Research into the functioning of the brain and how neurological science can inform teaching and learning and ultimately the level of challenge for able students, can be considered in part, as a modern reworking of the classical theorists' views of what is 'innate' versus what is based upon social factors.

Research undertaken by the Royal Society (2011) highlights how the new field of educational neuroscience, sometimes called neuroeducation, investigates some of the basic processes involved in learning to become literate and numerate. Beyond this it also explores 'learning to learn', cognitive control and flexibility, motivation as well as social and emotional experience.

The debate about the link between heredity and intelligence continues and researchers have actually discovered genes that correlate to educational attainment. Variations in 3 dopaminergic genes, DAT1, DRD2 and DRD4, have been found to be linked to dopamine levels associated with the highest levels of education (Beaver, 2012); however using a surrogate measure as a proxy for gains in attainment is not, in my view, a strong enough claim in terms of attainment. Of course, so many other factors contribute to educational attainment but genetics will continue to play their part.

Critics (Bruer, 1998, 1999; Bailey et al., 2001) have attempted to invalidate the integration of brain-based understandings into schools, yet teachers across the country continue to interpret the research and will continue to be drawn in by consultants profiteering from claims about the benefits of 'brain gym' and other such training. Bruer's (1998) message to educators was "hands off brain research", yet brain-based education continues to grapple for dominance, with the synergy of biology, cognitive science, and education attempting to support teachers to make better informed decisions about designing learning (Jensen, 2008, p.2). I agree with Blakemore and Frith's (2005) view that an understanding of the brain mechanisms that underlie learning and memory, and

the effects of genetics, the environment, emotion and age on learning could transform educational strategies leading to optimized learning. For me this provides a broader perspective on the subject as the greatest challenge of brain research does not lie in understanding the anatomical intricacies of brain functioning but in comprehending the vastness, complexity, and potential of the human brain (Caine and Caine, 1997). The brain is designed to communicate with its like and “our ability to enter the minds of others, by intuition and by speech, gives human beings a singular advantage over other species” (Carter, 1999, p.136). This links well to Vygotsky’s reference to a form of thinking aloud, first on the intra-personal plane and then moving into the inter-personal phase and also to Rogoff’s example (Moll, 1990) cited on page 24. Carter (1999, p.136) also refers to language allowing us “to juggle ideas in a uniquely creative way and our intuitive knowledge of others’ mental machinations makes our relationships complex, subtle and deep.” This adds strength to the argument pushing for greater challenge in the use of questioning – the brain has been designed to cope with such encounters and as such needs harnessing. Education provides access to strategies for abstract thought, such as algebra or logic, which can be applied in solving a vast range of problems, and can increase mental flexibility. “Literacy and numeracy change the human brain, but also enable human beings to perform feats that would not be possible without these cultural tools” (Royal Society, 2011, p4).

The notion of the social brain which forms part of the movement towards collaborative learning has developed out of the work of social constructivists including Vygotsky (1978) and Bruner (1977), who both stress the importance of dialogue and the use of language as a form of thought and therefore a medium for learning. Social constructivism views each learner as a unique individual with unique needs and backgrounds. The learner is also seen as complex and multidimensional. Social constructivism not only acknowledges the uniqueness and complexity of the learner, but actually encourages, utilizes and rewards it as an integral part of the learning process (Wertsch, 1997). Constructionism (Papert, 1993) is both a theory of learning and a strategy for education and builds on the "Constructivist" theories, asserting that knowledge is not simply transmitted from teacher to student, but actively constructed in the mind of the learner. "Learning is deeply influenced by social interactions and relationships" (Pritchard, 2009, p.93) and this is particularly true of our classrooms where relations between teachers

and learners and between learners themselves coexist. A classroom based on constructionism (Pritchard, 2009) has many elements that promote a socially driven learning environment. In this situation, the teacher acts as a facilitator and guides the learners along their paths of learning. Learners are assigned tasks in which they must implement particular instructional goals. They investigate, create, and solve problems.

Neuroscience (Geake, 2009) adds an interesting dimension in trying to understand how best to challenge students; however the pedagogical implications are less clear. The case has been made for teachers to embrace neuroscience to aid them in gaining a better understanding of the multitude of factors which govern students' learning (Geake, 2009). Some degree of understanding can help to raise awareness, but it is my belief that the design of learning tasks is the key to increased challenge. The factory model of education in which experts create knowledge, teachers disseminate it, and students are graded on how much of it they can absorb and retain "has lost popularity in favour of a constructivist, active learning model" (Bruer, 2008, p.51). A neuroscience perspective recognises that each child constitutes an intricate system operating at neural, cognitive, and social levels, with multiple interactions taking place between processes and levels. Again this represents a reworking of the innate versus social factors (Royal Society, 2011).

The argument is fuelled further by the mass of commercial organisations offering schools training, and a vast array of expensive resources promising to accelerate the learning process, yet there is no evidence to suggest that this is underpinned by research.

2.6 Challenging learning: thinking skills

The work of the classical theorists and neuroscience research fail to provide a concrete answer to the questions of how to best challenge able children. I will now present three different notions of what I believe constitutes challenging learning. Through careful scaffolding I propose teachers can challenge students by developing thinking skills, crafting effective questioning and designing appropriate tasks.

The Challenge Review Report defined challenge as:

> Designing teaching and learning to elicit from students their best efforts (i.e. challenge needs to be motivating) and to enable them to think and act in ways that are transferable and/or discipline-specific; and which are progressively more complex, critical, creative and independent (Curee and QDCA, 2008-2010, p.4).

The report also identified that "best practice calls for actively engaging students in their own learning through opportunities that are issue or problem based and relevant to the students' world" (Curee and QDCA, 2008-2010, p.24). Hertzog, Klien and Katz (1999) describe a challenging activity as one which would cause the students to perform at a level that exceeds their comfort zone and requires them to strive for success rather than achieve it effortlessly, and in doing so move just beyond their ZPD.

In considering how to develop able learners to become creative and self-critical thinkers there is a need to ensure optimum challenge is provided in the learning environment which in turn has pedagogical implications, for example, providing real life problem solving activities. The importance of accessing higher order thinking skills through the use of language in the classroom can be the cornerstone to providing challenge for able learners (Eyre and Lowe, 2002).

Able students thrive on problems that are challenging. A teacher who adopts a didactic approach by filling an able child with knowledge is short-circuiting the opportunity to develop thinking (Fisher, 2000). This can quickly lead to demotivation and boredom. Teachers therefore need to direct their focus towards higher order thinking skills, problem solving and challenging questioning engaging them in 'real' activities rather than repetitive textbook exercises. Dewey's (1916) rallying cry that education should be about developing children's thinking, not by telling them what to think but by helping them to find their own path to meaning has met with much support (Fisher, 2008). Too often the demands of the curriculum can stunt creativity in the classroom limiting opportunities for effective differentiation to extension tasks – these will not be challenging if the tasks are simply more of the same. Able students need the opportunity to learn both independently and in groups with teacher support and feedback (Fisher, 2000). This links well to Bruner's (1999) Spiral Curriculum suggesting that in order to enable the transfer of thinking processes from one context to another, children need to learn the fundamental principles of subjects rather than just master facts. He advocated learning through inquiry/exploration, with the teacher providing guidance to accelerate children's thinking. This will lead to better motivated and engaged students who "push the boundaries of their thinking and appreciate the additional intellectual challenge provided by teachers through tasks that stretch and excite them on a daily basis, in an environment that celebrates excellence" (DCSF, 2007, p.9). The rate of change within

society is accelerating at a pace which makes it difficult to predict what kind of knowledge or even skills our students will need in the future. This means that schools should be less focused on imparting information and more focused on developing independent learning through nurturing thinking and cognitive development that can be applied to solve problems. In promoting cognitive development teachers need to:

- Consider what will motivate and strengthen the will to think
- Teach children the skills of thinking
- Encourage the disposition to enquire
- Encourage them to believe that their thinking is possible, permitted and productive (Fisher, 2008:4)

The thinking skills can be further supported by encouraging students to take risks, and develop opportunities to progress their work in challenging and creative directions they have chosen themselves (NAGC, 2012).

Current research in the learning sciences shows a growing, critical need for students to work things out for themselves and become less dependent upon teacher-moderated instruction. Therefore when students join the Academy in Year 7 they should have been empowered by their earlier experience to better manage their own learning and ability to think, without excessive dependence on teacher input. Currently, when students arrive at the Academy they are not equipped to think for themselves and are highly reliant on teacher direction. This has provided the challenge to explore more effective strategies to support students in developing greater independence and confidence in their ability to move outside their ZPD. The proposal for a reversal of the current policy, which allocates more funds to the education of older children, resulting in the largest class sizes being in the earliest years of education, and the smallest at the top of secondary education for 17 and 18 year olds has some merit (Abbott, 2011). However this will only work if it is complemented by teachers who think creatively about how they approach their teaching by encouraging cognitive development through thinking skills, active learning approaches and skillful questioning (NACE, 2007).

2.7 Challenging Learning: Questioning Technique

One key strategy which contributes to autonomous thinking and learning is the quality of questioning used by teachers through Assessment for Learning. AFL involves dialogue between learners and teachers, a proportion of which is based on thoughtful and probing

questioning focusing on the key points of learning (Williams, 2012). Much of the questioning used in classrooms, which is the most basic form of scaffolding, is still very closed and designed to establish whether children have grasped facts rather than to explore their thinking (Eyre, 2001). Through observation I have evidenced a tension between using open questions and prolonging debate or relying on a number of quick fire, closed questions to prevent a divergence from the lesson plan. Challenge is distinctly evident in those lessons where students are able to question each other through carefully designed tasks which provide greater autonomy. In its Annual Report (2010, p.143) Ofsted found that "dialogue and questioning across the class are both central to learning and a key indicator of effective teaching." More than testing recall, questioning needs to encourage thinking and should extend beyond a single exchange so that a range of ideas, hypotheses, explanations and predictions are put forward, considered and analysed. Effective questioning is also important in gauging pupils' understanding in order to tailor explanations and activities where needed. All too often, I have observed, that in lessons that are mediocre or inadequate, questioning lacks challenge and is limited to seeking factual answers preventing students from moving into their ZPD. Most teachers will use closed questions to good effect, confirming that a student understands or remembers something, but make less use of open questions which prompt new thinking, probe levels of understanding and promote discussion and debate (DCSF, 2007).

When the teacher acts as a 'learning mediator' by asking questions designed to extend the learners' thinking a greater degree of challenge is provided. Techniques used to encourage students to engage in and question rather than simply accept facts included:

- Changing the proportion of questions asked by learners and teachers in lessons so that learners ask far more and teachers far fewer;
- Resisting 'thinking in boxes', and many learners' increasing desire to be spoon-fed as they move through secondary school;
- Building a secure learning environment, in which risk-taking and questioning is valued;
- Showing learners that not immediately succeeding at a task, or answering a question 'wrongly', is not a failure in itself but an essential part of the learning process (Eyre and Lowe, 2002 p.2).

A collective zone of proximal development where the learning is mutually and actively created by teachers and students, provides an environment where "questioning can be

orchestrated by a learning leader who begins by asking a question about core content and ends by summarizing the gist of what has been read" (McGregor, 2010, p.79). This can make way for a more challenging approach to questioning which provokes discussion and summarizing, aiding the students to prepare for the next stage in their learning.

The Branco Weiss Institute for the Development of Thinking in Jerusalem proposed the idea of 'fertile questions' (see Figure 2.1) to address concerns about the use of distorted questioning and an answering pedagogy (Harpaz and Lefstein, 2000).

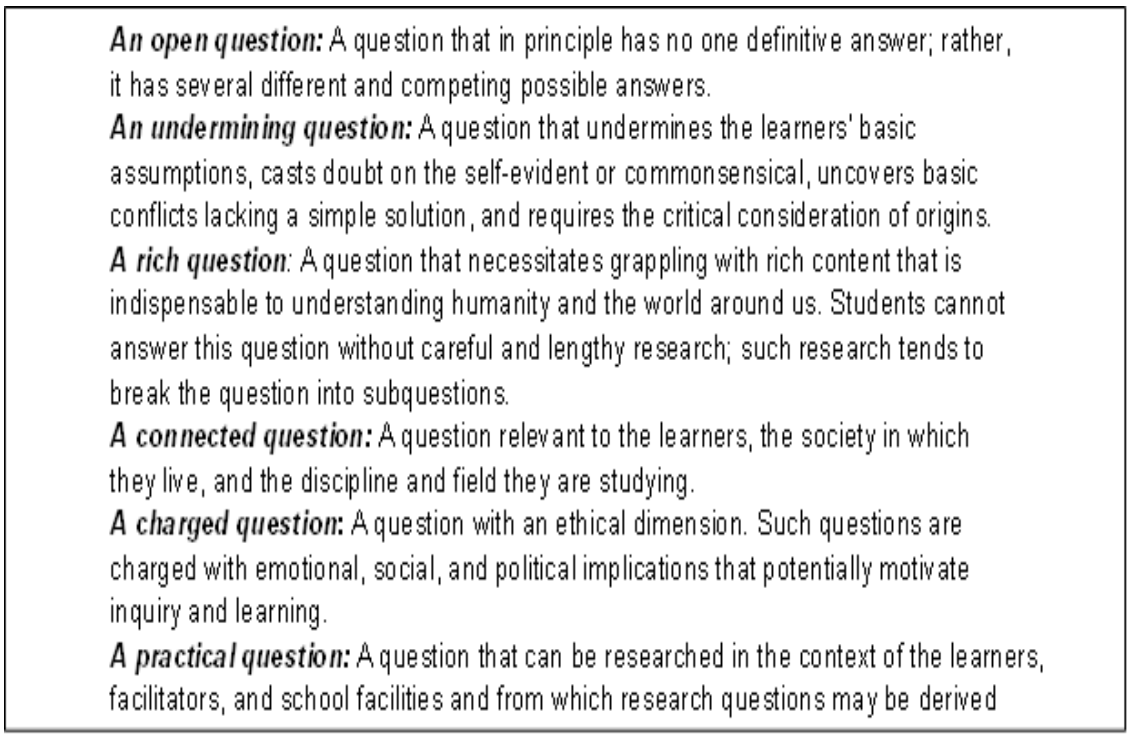

Figure 2.1: Fertile Questions adapted from: Communities of Thinking, (Harpaz and Lefstein, 2000).

In a similar vein, Brown and Wragg (1993) identify a useful list of probing questions designed to determine and move forward a child's thinking. McGregor (2007) refers to a range of pedagogic strategies overtly modelled by teachers to support the development of students' thinking and understandings through social interactions. These include consideration of learner responses through different types (and frequency) of interventional questioning.

The array of research which puts the spotlight on the different approaches to questioning provides a strong foundation from which to craft student tasks, therefore maximizing the

level of challenge. If we can go one step further and pose questions or statements which encourage increased discussion and debate, the range of divergent responses received from students can be used to build further lines of dialogue (Sockalingham, 2011). This approach is essential when teachers are designing learning tasks to push the boundaries and fully engage and motivate learners, and this is further strengthened when there is a shared framework of understanding between teacher and learner (Mercer, 2012). Talk is the principal tool for creating this framework, and by questioning, reformulating and elaborating a teacher can seek to draw students into a shared understanding of the activities in which they are engaged. This is reflected through an intermental development zone (IDZ) (Mercer, 2012) which is reconstituted constantly as the dialogue continues. This links well to Vygotsky's work which advocated the importance of socialization in the learning process.

2.8 Challenging learning: task design – Independent Learning Tasks (ILTs) (homework tasks)

The independent nature of homework and the expectation that it is completed without the presence of the teacher or peers presented its own challenge as it cannot therefore be a social activity. I therefore steered my thinking towards task design and the importance of embedded challenge through social interaction. Referring back to the Human Capital Approach (page 16) I advocate that through skillfully differentiated task design it is possible to engage learners with ideas beyond their current knowing into their ZPD, thereby challenging them to work beyond their potential. The Vygotskian theories of social construction and interactive learning support this approach. A process of mediation and scaffolding provide a solid foundation for negotiated task design (Newman, Griffin and Cole, 1989). Effective planning is therefore essential in meeting the needs of able students and should specify how challenging activities are to be incorporated into lessons. A DCSF report (2007, p.16) identified the following aspects of learning which should be accounted for when designing tasks:

- greater reflection;
- exploration of diverse viewpoints;
- consideration of difficult questions;
- formulation of opinions;
- problem solving and enquiry;
- connections between past and present learning;

- regular use of higher order skills (analysis, synthesis and evaluation);
- independent thinking and learning.

Upon reflection, this list, while comprehensive, fails to recognize the important contribution to be made by the students themselves during the initial stages of task design. Student ownership of learning at the early stages of the journey provides greater opportunity for challenge through deeper thinking and engagement.

Research conducted by Ofsted (2009, p.9) referred to an example of good practice in a secondary school where:

> The focus on improving provision for these [gifted and talented] pupils brought about a culture change for teachers in their perceptions about 'giftedness', so that thinking more about the needs of this group, in terms of raising expectations and increasing the challenge for them, helped to add rigour to lesson planning and teaching for all pupils throughout the school.

I have observed first-hand how challenge can be heightened when students are able to choose a task from a range of options. Having the opportunity to select from different starting points, materials, subjects or processes means that students can select activities that they find more interesting and that match their abilities. They may also choose to extend or adapt the set work themselves providing scope for them to move beyond their ZPD (NCCA and CCEA, 2006). In planning and designing tasks, teachers need to be flexible when thinking about teaching and learning. Particular frameworks are worth considering including Bloom's Revised Taxonomy of Educational Objectives (Anderson and Krathwohl, 2001) and Gardner's (1999) model of Multiple Intelligences allowing different aspects of intelligence to be used in task design.

Too often differentiated learning tasks are considered to be the solution for stretching able students. However they tend to be extension or bolt-on exercises added without coherence or sound educational rationale. A more effective approach to differentiation targets cognitive challenge to "develop problem-solving and thinking skills, higher order thinking and questioning skills" (NACE, 2007:8). The six key areas for successful extension work identified by Eyre (2001): critical thinking; creative thinking; increased independence; problem-solving ability; reflection and self-knowledge, accord with the ingredients needed for challenging task design. Able students need to understand the

"goal of their learning, and the journey to it, supported by the right educational opportunities, support and encouragement to strive for high performance" (Eyre, 2011, p.20). This also reflects my own view about the importance of students engaging in the initial stages of task design as co-owners of the learning process in tandem with their teachers. A study which involved 406 students in a traditional assignment based learning environment and 312 students in a redesigned problem based scenario investigated the influence of the environment on their learning (Nijhuis, Segers and Gijselaers, 2005). Deeper challenge in the students' learning occurred when they showed an interest in and searched for meaning in the design of the learning task.

It could also be argued that the inclusive classroom which gives students greater autonomy and independence has a negative impact on learning. However, evidence suggests that through the power of being given ownership of their learning, students attribute success and failure to their own decision making rather than blaming other factors like the teachers or the curriculum. Critical however is the degree of appropriate scaffolding provided by the teacher. Students value opportunities to negotiate with staff and to use their own initiative: what they think or believe of their own self-assessments and critical reflections predominate (NACE, 2007), but this has to be built on strong foundations of confidence, trust and a 'can-do' approach.

In summary, task design should prompt teachers to expect different, more divergent outcomes and answers, accepting that they may need a different pace or quality of activity to sustain, extend and challenge their students' thinking to move them into their ZPD (Fisher, 2000).

2.9 Developing the framework for the investigation

In exploring the theoretical background relating to able children, I became interested in cognitive development and more specifically the importance of questioning and thinking skills in providing challenge. Tasks designed in particular ways can scaffold able children to work, learn and move forward into their ZPD. As the Principal I am also able to mediate with and encourage my own teachers to step into their zone of proximal development and explore new approaches to task design.

The idea of the 'Big Concept' (McGregor, 2007, p.88) which allows for "prediction and decision making through planning and thinking about the future" was an area missing during a number of observations and Learning Walks across the Academy. A HMI monitoring visit to the Academy reported that:

> Students are sometimes quite passive in lessons, particularly when questioning is untargeted or weak, but they enjoy active learning and respond positively when given opportunities to work collaboratively and are sensible when evaluating one another's performance (HMI, 2010, p.3).

In spite of definite progress in relation to questioning techniques, the Section 5 Ofsted Inspection one year later observed that "too much closed questioning invites brief factual responses that do not disclose sufficient information about students' confidence in their grasp of the work" (Ofsted, 2011, p.4). "Teachers must plan higher-order questions that will engage and challenge pupils from the start of a lesson" (DCSF, 2009, p.50). A good balance of teaching and learning approaches in lessons is essential including:

> Questioning in ways that match the direction and pace of the lesson to ensure that all pupils take part . . . and deciding when it is apt to have a 'no hands up' approach; listening carefully to pupils' responses and responding constructively in order to take their learning forward; and challenging pupils' assumptions and making them think. (DCSF, 2009, p.23)

Classroom teachers cannot completely ignore the research base and need to appreciate that students learn at different rates, possessing varied types and degrees of abilities, interests, and styles of learning (Hong and Milgram, 2008). Teachers who do not have these basic assumptions about student learning may not see the need to differentiate (Van Tassel-Baska and Stambaugh, 2005). Within the Academy, teachers have been provided with extensive training to support them in developing a wide range of skills to put into practice essential strategies. This is important as the teacher is the facilitator, the resource manager, the enthusiast, the guide, the prompter, the change agent, providing a warm, supportive atmosphere allowing children to make choices and to be a part of the decision-making process to direct and secure their learning (George, 1992). Students need the opportunity to explore and find out for themselves – thinking cannot be taught in the same way that routine football or cricket motor skills are regularly practised through repetitive drills.

Able pupils in all but the least effective schools said they felt suitably challenged in some of their lessons, but this was not consistently the case in all lessons (Ofsted, 2009). Inspection evidence also shows that:

> Teaching and learning can be insufficiently challenging and poorly matched to their needs. Where this is the case opportunities for independent learning can be too limited, teaching is too directive, and additional tasks for higher-attaining pupils often simply require them to complete more of the same work rather than introduce new challenge. As a result more able pupils can lose enthusiasm and fail to make the progress of which they are capable (Ofsted, 2010, p.40).

My task as the Principal is to lead action research which has the potential to empower teachers to design learning that challenges able children effectively and overcomes the issues raised by Ofsted.

The literature suggests that to extend able students' cognitive development, careful attention must be paid to the scaffolding of their learning tasks and the subsequent mediation to 'push' thinking further and harder (into each student's ZPD). I intend to explore current practice in the Academy and consider how a new approach to task design; specifically ILTs can lead to pedagogical change in attitudes to teaching and learning.

Chapter 3

METHODOLOGY

3.1 Outline of intentions

This study aims to inform current practice and explore strategies for increasing the level of aspiration and performance of able students and in particular through sustained challenge in their learning. By scrutinising the issues surrounding the underperformance of able students, I hoped to empower staff to construct new approaches to teaching and learning. It was important for me to select an appropriate methodological approach (Action Research) and in doing so I considered my research questions, (listed below) the design of the research tools, data collection and analysis strategies.

1. *What do able students perceive to be 'effective challenging activities?'*
2. *What do teachers of able students perceive as 'effective challenging activities?'*
3. *How far do the views of students and staff compare?*
4. *How do teachers effectively enact challenge in Independent Learning Tasks where achievement is already high?*

Elliott (2006) argues the case for making a clear distinction between 'educational research' and 'research on education' with the former constituting a more practical commonsense approach to research and the latter being rooted in scientific investigation. He draws on the work of Dewey, Rorty and Sen whilst referring to the Aristotelian concept of 'phronesis' which supports his view of educational inquiry as a form of commonsense reasoning. In contrast to the view of action research proposed by Carr and Kemmis (1986), I was struck by Elliott's (2006) reference to 'commonsense reasoning' and recognized the need for myself and my staff to begin to be critical in the sense of challenging some of the 'old habits' of directing teaching and the associated resources, while it was also important to develop their commonsense reasoning. We needed to be brave, step outside existing comfort zones and be prepared to change our approach to teaching and learning conversations.

This issue of underperformance amongst the most able students including those from deprived communities is not new, or simply confined to the Academy, and has been the focus of a number of central government policies and interventions including what has

become known as the 'gifted and talented' programme. The education of the country's most able students became a national issue resulting in the publication of *'Highly able Children'* (House of Commons Education and Employment Committee, 1999). This report paved the way for the introduction of the government funded Excellence in Cities (EiC) initiative in 1999, which comprised seven components of which one was the 'gifted and talented' strand. The focus of this strand was explicitly on ability rather than achievement or attainment, so underachieving pupils were a priority (Smith, 2006, p.73) and it is clear that although progress has been made, the primary aim of driving up standards in schools in major cities has not been fully realised. The government's approach to the gifted and talented strand was referred to as inconsistent and incoherent. . . a mess. . and an estimated 800,000 able students let down (Baker, 2010).

The Academy's able students had been through the National Gifted and Talented programme which had provided them with a range of opportunities, but for many of these students the activities had not impacted on their levels of attainment as anticipated. I carried out a more focused review of the Contextual Value Added (CVA) data (RAISE, 2009) we held of the 'gifted and talented' cohort which confirmed their underperformance in relation to target grades and national expectations. In the year prior to starting this research only six students (29%) from the most able group of 21 (identified from their individual Average Point Score [APS]) achieved their target grades in their final GCSE examinations. On tracking the data for previous cohorts over a three year period the trend had been mirrored across the majority of subjects prompting further exploration of the Academy's work. Conscious that there could be ethical issues in selecting able students, I intend to look at how the outcomes of the research can be cascaded more widely for every child in the Academy.

I looked closely at the teaching and learning diet of able students, initially via the system of learning walks. This involved senior staff and middle leaders (who had all been trained in observation techniques) covering each teaching period on a rota basis by dropping into lessons to gauge the quality of the learning experience. The outcomes of the learning walks were recorded on a proforma (Appendix 3) discussed weekly, findings disseminated and interventions put in place as required. Good practice highlighted from the learning walks was shared with all staff via Monday morning 'best practice' briefings. The briefings were introduced to encourage staff to share new teaching and learning

strategies which had been used in their lessons. Typically a presentation of a selected strategy would take ten minutes. All sessions were video-recorded (staff agreement to be recorded checked beforehand) and then uploaded on to the staff shared area on the Academy's computer network. This gives staff an archived collection on best practice resources which they can trial in their classrooms. The staff sharing ideas range from trainees and newly qualified teachers through to the most experienced.

In some lessons, the learning walks highlighted a lack of aspiration on the part of staff, including low level questioning techniques, simplistic task design and limited opportunities for students to take responsibility for their learning or engage in group activities. This accords with research by Eyre (2011) and NACE (2007) where the importance of the teacher in scaffolding and mediating learning is highlighted. Scaffolding and mediation both featured as key elements in the design of the more challenging task produced in the third layer of action research. Prior to the start of the study, analysis of lesson observation notes also emphasized this lack of aspiration with 'questioning techniques' proving the weakest area for groups of able students. Post lesson feedback with teachers revealed that they too had struggled with strategies for this cohort of students. This issue also featured in the Academy's 2011 inspection:

> Students arrive in classrooms ready and willing to learn. Too often, however, this can translate into a willingness to sit quietly and listen attentively to the teacher guide them, rather than take an active and more energetic role themselves in the lesson (Ofsted, 2011, p.5).

The criticality of the role of the teacher cannot be underestimated but we have to be clear that "teachers do not create learning, learners create learning, teachers create the conditions in which students learn . . . it is important to create challenging learning environments – 'high nutrition' environments to make students smarter" (Williams, 2006, p.7). During the post lesson review at the end of the second action research layer the lack of challenge in the task provided was evident. A period of reflection prompted not just a redesign of the task, but a strategy which grouped students to encourage challenging discourse about why certain decisions had been made as they progressed through activities.

How then to tackle low staff aspirations, improve the quality of teaching and learning, and encourage students to become more active and engaged in their learning? I need to

begin by encouraging others to see their practice as research and therefore "contributing to the development of communities of action researchers who are studying how they can improve their learning for mutual benefit, moral accountability and social evolution" (McNiff, 2013, p.123).

3.2 My role as researcher

Action research offered me a collaborative pathway to begin looking more critically at how teaching and learning was providing challenge for able students and subsequently, ways to improve current practice. I could have taken an alternative route, for example, directing staff to work on the project or adapting a case study approach. However, I preferred to take a proactive role in the research, and this reflected my personal values about understanding first-hand the factors influencing the quality of teaching and learning provided for students. Action research is a form of enquiry, with its own methodologies and epistemologies, its own criteria and standards of judgment (McNiff and Whitehead, 2002, p.1). It is about working towards practical outcomes, and also about creating new forms of understanding, since action without reflection and understanding is blind, just as theory without action is meaningless (Reason and Bradbury, 2008). Reflection of various forms plays a critical role in action research and now I would need to integrate these within the existing spirals of self-reflection (a spiral of layers of planning, acting, observing and reflecting) that I undertook as a school leader. Much of my work as a leader focuses on strategy, looking at the bigger picture of continually ensuring all students are getting the best possible teaching and learning experience every day. The reflective process involved in the action research layers prompted me to take a closer look at practice, resembling the procedure a photographer would follow when zooming in to take close shots and then zooming out again. The action research also led to an allocation of quality time to reflect and act – this is a rare opportunity for a leader who has to grapple with the bigger picture of teaching and learning.

As the Principal undertaking the action research in my own organization it was important for me to 'take a step back' at each stage of the process, consider the emergent data, and plan for changes in direction. I was also aware of the potential tensions which lay ahead and had to manage three interlocking challenges as part of the research task. First, was the need to build on the closeness and knowledge I had of the organization

(*preunderstanding),* while at the same time creating distance from it in order to see things critically and enable change to happen. At the start of the research I was able to hold on to the 'big picture' while 'drilling down' to targeted areas of the study. I was conscious not to single out or show preferential interest in certain areas of the Academy's work. Second was the dual role that I held as the Principal and the action researcher, and the consequent ambiguities and conflicts of this position. Finally, I needed the skill to manage the organisational politics which had the potential to undermine research and block change (Coghlan and Shani, 2008). In a climate of frequent change I had to ensure that the team engaged with the research and ultimately the wider group of staff were clear about the pedagogical benefits to be reaped from this work. I found the role of insider action researcher exciting, demanding and invigorating, contributing considerably to my own learning and the development of organisational learning capabilities (Coghlan and Shani, 2008). I anticipated some issues from staff and students who may not have felt able to express their views freely, due to my position in the Academy – this concern did not manifest itself.

3.3 Research design

Having identified that elements of the Academy's work needed to improve I decided to take action through practice based research. I chose action research as my preferred methodology (way of doing things) allowing me to demonstrate my beliefs, commitments and hopes in practice (McNiff, 2013). My belief (ontology) that change can happen, and that we can make a difference to children's lives is rooted in my everyday practice and knowledge (epistemology) that teaching and learning is a constantly evolving landscape. This changing landscape needs to be under the spotlight with practitioners constantly challenging what they do, why they do it and how they can continually seek strategies for improvement.

Methodology helps us to understand, in the broadest possible terms, not the products of scientific inquiry but the process itself (Kaplan, 1973). The research paradigm had to be consistent with my sociocultural stance, "to be located in a particular paradigm to view the world in a particular way" (Burrell and Morgan, 1979, p.24; Patton, 1990). Every research methodology is embedded in commitments to particular versions of the world (ontology) and ways of knowing that world (epistemology) (Scott and Usher, 1996).

“Methods are best understood as the tools and procedures we use for our inquiries and methodology is about the framework within which they sit” (Cousin, 2009, p.6).

A positivist approach would have provided me with ‘knowledge’, whereas the “subjects of research remain in relative ignorance” (Gergen and Gergen, 2008, p.165). This tactic would be less successful as “the contexts of classroom and school, the problems of teaching, learning and human interaction present the positivistic researcher with a mammoth challenge” (Cohen, Manion and Morrison, 2007, p.11). A questionnaire would give limited access to knowledge without the opportunity to gain a deeper understanding of the respondents’ views. A positivist slant would only prove helpful in providing the statistical foundations for the more in depth qualitative data essential to the future value and use of the findings.

In contrast, the interpretivist paradigm which is characterized by a concern for the individual where efforts are made to get inside the person, to understand from within and to focus on action, provides a sensible route into the research. “The imposition of external form and structure is resisted, since this reflects the viewpoint of the observer as opposed to that of the actor directly involved” (Cohen, Manion and Morrison, 2007, p.21). Classrooms provide an ideal context within which to test educational theories and teachers should be at the forefront of educational research. Unless they are fully involved in research being undertaken, they will not wish to be consumers of the findings that emerge from it (Costello, 2003).

Action research is “simply a form of self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own practices, their understanding of these practices, and the situations in which the practices are carried out” (Carr and Kemmis, 1986, p.162). This process provided a vehicle to look at pedagogy within the Academy, engaging myself and staff in examining and reflecting on practice while seeking strategies for continuous improvement.

3.4 Nature of the study (Action Research)

Action research involves learning in and through action and reflection, and it is conducted in a variety of contexts. "Because action research is always to do with learning, and learning is to do with education and growth, many people regard it as a form of educational research" (McNiff and Whitehead, 2003, p.15). In contrast it could be argued that action research is also about refocusing since the process will often derail pre-existing systems as new ideas emerge.

Taking an action research approach "is highly contextualized within the world of work, and undertaken with the benefit of insider knowledge and an acute awareness of what matters most" (Sharp, 2009, p.56). However, I was starting from a position of not really knowing 'what matters most', hence the need to focus the process. I was aware that my views would change. I experienced new ideas changing direction based on fresh information and as cited by McNiff (2010, p.72) "changing your mind is the starting point for changing and improving your practice, which is what action research is all about". I started with the notion of challenge then created a series of questions (section 3.1) to focus the research. The questions and clear research layers provided the clarity and structure which I needed as a novice researcher. Information gained from the quantitative research undertaken in the first layer moved my thinking in a different direction, to begin looking at the nature of Independent Learning Tasks. A further change of track occurred at the conclusion of the second research layer, when I had not anticipated the lack of clarity in the research tool used with the students. This unexpected development is typical of the process of learning, since young people in our classrooms have tremendous potential to take their own learning to new heights, and it is this that confirms the importance of the practical and changing nature of action research. A number of studies have alluded to action research being the impetus for teachers' changes, including changes in their pedagogy, in their thinking, and in their confidence which leads to professional growth and improvement (Johnson and Button, 2000; Ross, Rolheiser and Hogoboam-Gray, 1999; Sax and Fisher, 2001).

Wartime operational research and the post-war development of Kurt Lewin's (1946, 1948) theories of change agency in formal organizations provided the roots to what we now know as action research. Lewin's model of action research was based on a cycle or

spiral of conceptual discovery, planning, executive and evaluative activities. In his schema, the distinction was preserved between researcher and researched (Bryant, 1996). Until the end of the late 1960s theories of action research were cast within a positivist applications paradigm. The critics cited inadequate theorizing and a lack of methodological control as central issues associated with action research. Rapoport (1970) criticized existing understandings of action research as focusing too exclusively on the existence of a client with a problem to be solved, at the expense of scientific interests.

Interest in this area progressed with Stenhouse's (1979) advocacy of 'teachers as researchers' and the work of the Humanities Project and the Tavistock Institute in developing action research as a process distinct from scientific research. The action research debate continued with Sanford (1981) who highlighted practitioner dissatisfaction with the institutional separation of research from practice. Action research has developed from its early use within social welfare fields, to a methodology with application across many fields where the purpose of the activity is to effect change. It is closely linked by many writers with the concept of 'reflective practice' which has its roots in the work of Dewey (1933) who saw one kind of reflection as leading to the testing of hypotheses in action. The work of Schőn (1983), Carr and Kemmis (1986) and Winter (1989) has contributed to a revival of interest in action research as reflective practice. In striving to reach an understanding of practice, action research will seek validity in what McNiff (2013, p.89) calls "making a claim to knowledge'. In order to achieve this, the most thorough critique of data is desirable. There is consequently a limit to the potential of individual reflective practice; action research should seek the views of others as to the meaning of the data they have collected. In this way, the action research process becomes a little like the process of science – there is an epistemological necessity for collaboration in the interpretation of data. The more ideas one can gather, the nearer one might get to the meaning of the data, hence my decision to use a range of methods including questionnaires, focus groups and lesson observations. As professionals we have a tendency to discuss issues taking a dialogical approach but this is not adequate. By moving from what Waters-Adams, (2006) suggests is the technical approach to a more reflective tactic, it is this reflection which becomes the basis of the validity.

The theory-ladenness of action and the reflexivity of consciousness present difficulties when it comes to the understanding of professional practice (Waters-Adams, 2006). The first suggests that it can only be fully understood from the inside; the second that an outside interpretation will inevitably impose meanings on a situation which may or may not be there.

The resolution of problems which occur in our classrooms can only take place by adopting a course of action which cannot exist outside the practitioners' history, beliefs and values. Therefore, to help practitioners understand what to do, it is essential to have a research approach that illuminates the personal complexities of their own situation and it is this reflective aspect of action research that enables it to do that (Waters-Adams, 2006).

Reason and Bradbury (2008, p.1) provide the following extract which is helpful in breathing life and meaning into the purpose of action research:

> Action research is a family of practices of living inquiry that aims, in a great variety of ways, to link practice and ideas in the service of human flourishing.

This view resonates strongly with my own belief in the importance of teachers' questioning and reflecting on their own practice, and continually engaging in the process of change. The importance of teacher engagement in research and the ongoing need for reflective practice cannot be underestimated (Hopkins, 2002; Brydon-Miller and Greenwood, 2003; Koshy, 2010). By empowering members of the Learning Community to engage with the research through a participatory approach I gained their full support, and in doing so they became appreciative of the importance and relevance of action research as a lever to improve teaching and learning.

To ensure credibility with the staff I was prepared to put my research tools under the microscope. I did not present myself as the expert but as a new researcher, keen to engage in a collaborative process with reflection and review firmly embedded. In conducting research there is a continual need to ask questions such as: Who am I? Who are we? What am I doing? What are we doing? An ongoing process of reflection ensured these questions were answered and as the research progressed I became aware that the staff in the Learning Community were becoming increasingly empowered as they moved out of their comfort zone. The observed lessons provided evidence of

their willingness to ‘take risks’ and to put their practice under the microscope. Practitioners need to research their own practices to show how they have improved quality (McNiff and Whitehead, 2010) and the subsequent reasons. Therefore as the Principal and lead teacher in the Academy it was important for me to be a role model in taking the initiative to conduct research.

Action research predominantly involves working within a qualitative paradigm defined by Creswell (2009) as a way of exploring and understanding the meaning that individuals or groups ascribe to a social or human problem. McNiff and Whitehead’s (2010, p.17) eleven main characteristics of action research resonate with my study, for example, the reference made to “intentionally political” begins with the “insider/outsider debate” and the potential for conflict due to my role as Principal in the organization. The research had the capacity to be disruptive of existing power relationships including the typical ‘teacher in charge of the class’ approach. By disrupting the status quo I infused an element of risk to the study and the potential for change brought about by the research. Would the views of staff and students change at the conclusion of the research? I would anticipate a positive view of the research from them, as the outcomes demonstrate tangible transformation in teaching and learning.

In the context of my own study it has “transpired into a practice of participation, engaging those who might otherwise be subjects of research or recipients of interventions to a greater or lesser extent as inquiring co-researchers” (Reason and Bradbury, 2008, p.1). A group of staff were identified who were enthusiastic about the research and its capacity for transforming pedagogy. By taking a collaborative approach staff were empowered to engage proactively and contribute at each stage of the action research process. This prevented them taking an ‘observer role’ and provided a mechanism to ensure their contribution counted. By using this approach teachers had the autonomy to explore the relationship between theory and practice and in doing so test the potential for change, first hand. The importance of the practical purposes and interests of human beings when conducting an inquiry have been highlighted by Rorty (1999) and Dewey (1974), and is further reinforced by Elliott’s (2006, p.173) reference to “democratic virtues”. In a similar vein, Sen (2002, pp.39-42) in relation to public choice theory argues that “values are rationally established and validated through free and open discussion alone”. In conducting research the core values of the organization are critical as are the virtues

which arise from these. Herbart's Lecture on Pedagogy, at the University of Gottingen in 1802, made clear "connections between the nature of pedagogical knowledge (theory or science) and the tact of pedagogy that was required in the practice of teaching," while suggesting that "tact occupies the place that theory leaves vacant" (Van Manen, 1995, p.45). He also made reference to the social context of any classroom incident which would be too complex for any single theory or set of principles to fit the bill (Van Manen, 1995, p.42).

Using a similar approach to that taken with staff, students were engaged in reviewing elements of the research tools and their input influenced the shape of the evolving enquiry, throwing new light on my own preconceived ideas. This moved the research in a new direction casting aside the pre-planned approach. Effective research is potentially transformative of identity, with the ability to expose vulnerability and raise existential anxiety with all the emotion this brings with it (Stacey and Griffin, 2005). The research process I engaged in has proved transformative - teachers now want to lead the change process within the Academy.

Despite the contribution and potential of action research identified by writers such as Reason and Bradbury (2001a; 2008), the approach has been critiqued as being 'weak in theory', 'little more than consultancy' and lacking 'impartiality and validity'. All action research will be unique due to its location in a particular situation and for this reason the reference to it 'being weak in theory' is difficult to justify. My own experience of joint reflection and inquiry rejects this view and proposes an approach far removed from consultancy, with clear evidence of impartiality and validity. At each stage of the research the views of teachers and students were embedded with openness to changing direction. The student 'thinking skills bubble' (Figure 3.5) is a prime example of this strategy in action – the group rejected the first approach due to a lack of clarity. This prompted a redesign of the research tool into a student friendly exploration of 'thinking skills' (Figure 3.7). From the outset of the action research process I developed a collaborative approach engaging staff in feedback about the research design and incorporating their views, thus avoiding any suggestion that my work could be 'little more than consultancy'.

Action research provides answers to questions which are specific to the subject of the research and as such general theoretical principles can be meaningless to the change process. Practitioners need 'real life' solutions rather than textbook models to give them the confidence to explore and redefine their practice. Theory has its place and can serve as a useful foundation to research but it is the 'doing' and 'finding out' from action and 'reflection on action' which provides the lever for change. Karim (2001, p.34) notes that the "need to produce immediate and practical research findings puts pressure on participants, and may lead to scant attention to methodological rigour". In my view Karim is addressing the wrong issues. Action research is about being critically subjective and seeking to change practice, not immediately, but over a sustained period of time. The cyclical nature of action research naturally leads to rigour through the application of thought, reflection and critique. I have been particularly robust throughout my research in applying the theory of learning, thinking skills, reflection and challenge to integrate rigour into the process. By triangulating various methods I was able to ensure the rigour and validity of the data collected which provided different insights into the same issues. This added validity to a world with different perspectives.

Before embarking on the study, evidence from the Academy's daily learning walks and attainment data in the form of examination results and Contextual Value Added (CVA) offered a starting point to begin exploring the reasons for the underachievement of able students. The specific strategies used for the research including questionnaires, focus groups, lesson observations and thinking skills bubbles allowed a rich source of data collection. I added to the rigour of the study with regular journaling of the research activities and retention of all data collected.

As a novice researcher aspiring to improve practice in my organization, it was important to consider the various action research models developed by different authors. All adopt methodical and iterative sequences of research promoting the same cyclical or spiral approach to action and reflection, and have their origins in the work of Kurt Lewin. An action research project should consist of four stages (Grundy and Kemmis, 1981) which are cyclically repeated as long as necessary to change or correct the problem. The stages are: planning; taking action; monitoring/observing; reflecting. In reality, the process might not be as neat. The stages overlap, and initial plans quickly become obsolete in the light of learning from experience. The process is likely to be more open,

fluid and responsive (Kemmis and McTaggart, 2005). To help focus the research I started with a set of research questions designed initially, to scrutinise the challenge experienced by able students. These were supported by clear action research layers which provided a structured process with critical reflection embedded. I regularly reflected on practice and the emerging research findings using my journal to record developments. The questions facilitated both a quantitative and qualitative approach. In Question 1, I looked "unselectively at the data in a quantitative manner, similar to a wide angle camera lens, recording information from the same distance rather than zooming in to particular details consistent with the main purpose of the study" (Wolcott, 1994, p.16). I then proceeded to use a qualitative process for the remaining questions, allowing greater focus on the individual views of staff and students.

At the simplest level action research involves a spiral or cycle of planning, action, monitoring and reflection. The research sequence highlighted in Figure 3.1 underpins the basic process of my inquiry. However I did not start with planning; I engaged with monitoring and observation of existing practice (reconnaissance) before beginning to plan and implement a change. As I became more involved with the research I discovered each stage became intertwined and a natural flow from one phase to the next occurred.

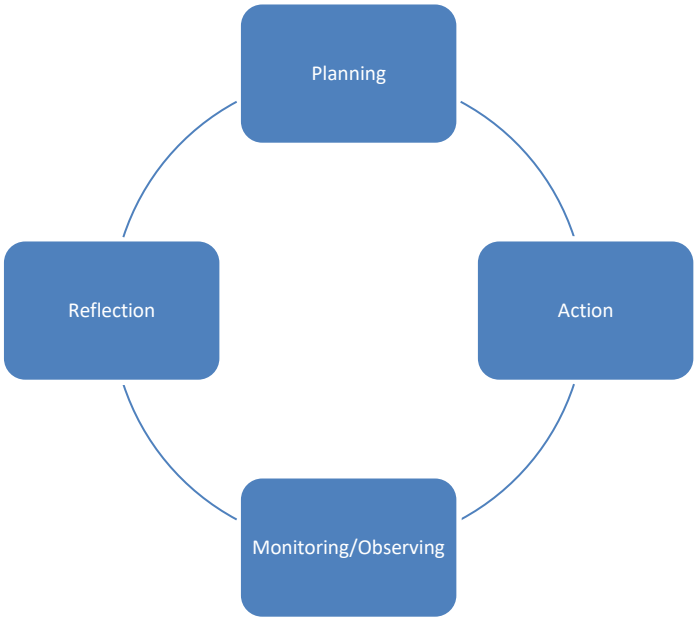

Figure 3.1 Simplistic Action Research Cycle

I found myself reflecting as I acted – something that Donald Schön (1983) calls 'knowing-in-action' – and monitoring also took place as the action proceeded (Waters-Adams, 2006). Realistically action research can require a more lengthy process (Muir, 2007) lending itself to an extended cycle as shown in Figure 3.2.

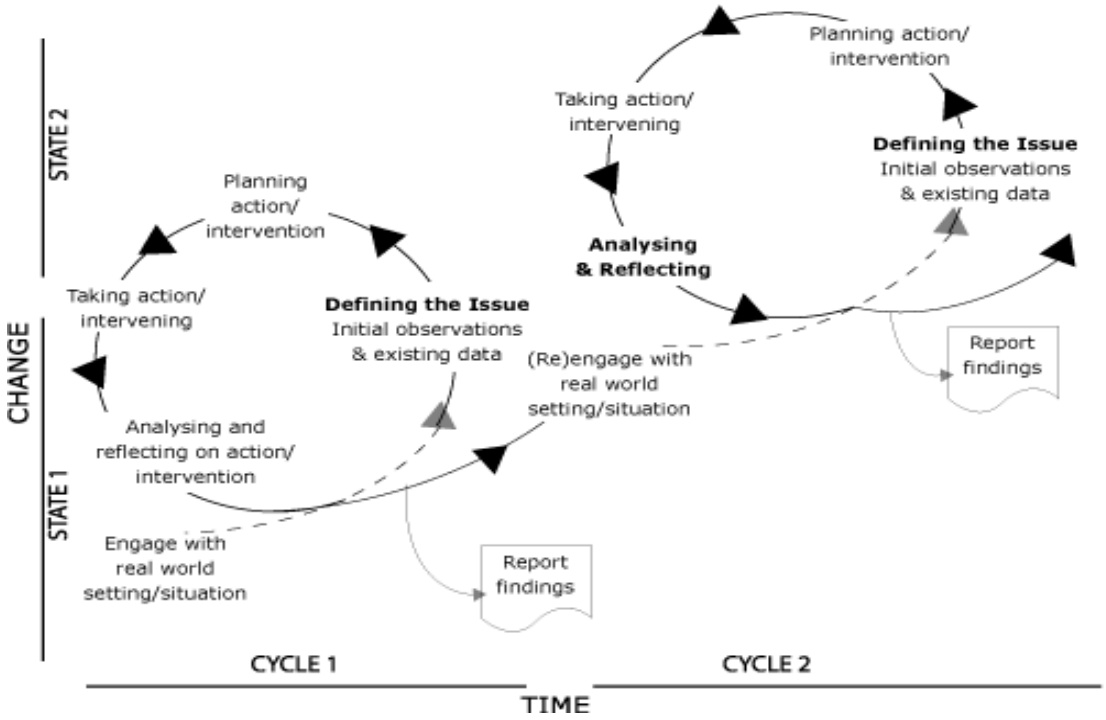

Figure 3.2 Extended Research Cycle (Muir, 2007)

In Figure 3.3 Riding, Fowell and Levy (1995) offer a further extended option showing how the insights gained from the initial cycle feed into planning of the second cycle, for which the action plan is modified and the research process repeated.

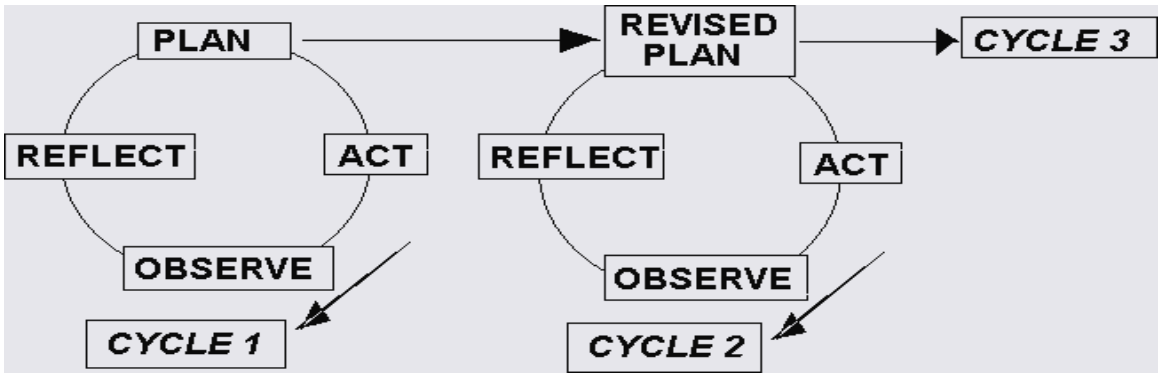

*Figure 3.3 Extended Action Research Model: 3 Cycles (*Riding, Fowell and Levy, 1995*)*

All of the models proposed offer a strategy for conducting research; however the use of diagrams has been cited as inadvertently promoting a rigid approach to research (Carter and Halsall, 1998) and may confuse a new researcher particularly if they deviate from the prescribed stages (Burton and Bartlett, 2005), but it helps clarify for the researcher, reader and user of the findings how the action research cycles evolved. Being fully aware of the potential for confusion, McNiff (2002) redesigned her original cycle to show how the process of research could take a number of different turns enfolding all its previous manifestations yet constantly unfolding into new versions of itself. Drawing on the work of Whitehead, McNiff (1988, p.45) provides a reminder of the "messiness of action research, showing a process that becomes spirals of spirals" (Figure 3.4).

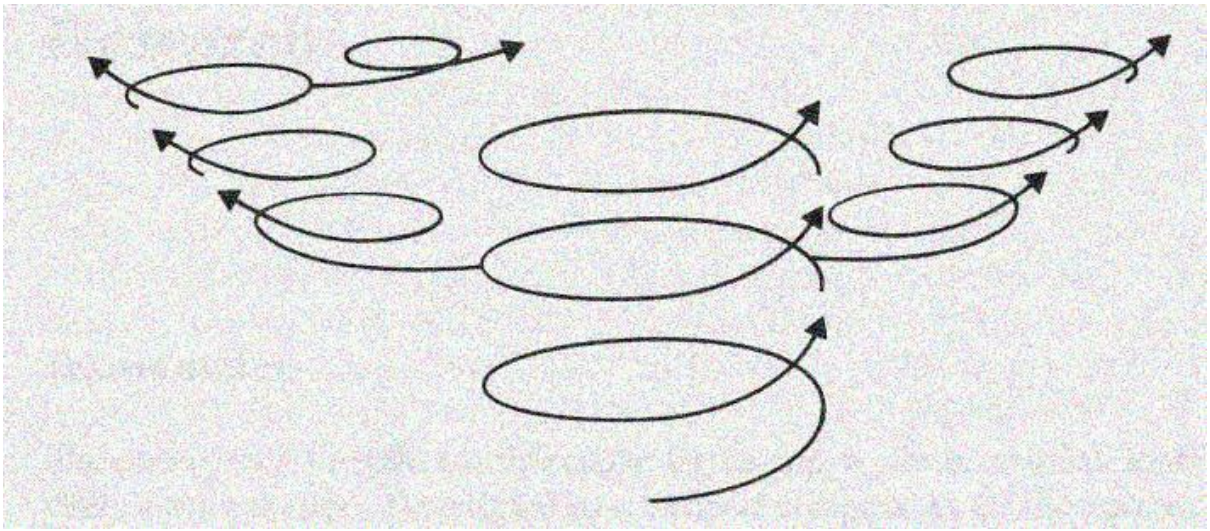

Figure 3.4 Action Research Spirals

All representations of the action research process on paper are simplistic. In reality, life is complex and things rarely go as planned. Indeed, although action research may start with a carefully planned action, the nature of the process makes the outcomes uncertain. Links emerge and the inquiry can deviate from its original path as these aspects are explored and reflected upon (Waters-Adams, 2006). It is the process of continuous reflection which leads to a review of action and the evolving research cycles. In essence, as the researcher I had the luxury of developing an appropriate cycle of research to suit my particular circumstances, and did not fear that "the tight specification of process steps and cycles may trap teachers within a framework which they come to depend on and which will, consequently, inhibit independent action" (Hopkins, 2002, p.50). This did not become an issue for me as I used the action research models as a foundation to develop

my own layers of research in the form of a funnel. This would capture the large amount of data at the initial stage of the research process filtering down to the essential information which would lead to the change in practice.

The action research process developed for this study is based upon three layers as shown in Figure 3.8, with each containing three key stages; Plan, Act and Reflect. This process is similar to the model proposed by Riding, Fowell and Levy in Figure 3.3. However my construction eliminates the need for an 'observe' as elements of this aspect contribute to my reflection and filtering process. As I observed actions I reflected on the reasons, filtered information and considered the next stage. Preplanning would not have been effective in developing the action research funnel due to emergent data. During the research there were points where I had to stop - the need for reflection at each stage had not been anticipated yet proved critical as the findings began to emerge. Warnings about how layers could easily continue to spiral and also how information deemed to be important could quickly become obsolete were confirmed.

At the end of the first layer unexpected data emerged in the form of dissatisfaction with independent learning tasks (homework) and the process of reflection and filtering contributed to the structure for the second layer. In a similar manner the third layer evolved from the reflective and subsequent filtering process undertaken at the end of layer two. To be transformative, action research needs to be carried out over a sustained period of inquiry and involve reframing the problem in the light of new sets of questions. It is this "ongoing reframing of the problem that leads to the transformative action that characterizes action research" (Wilson, 2009, p.192).

3.5 Phases/layers in the study

To enhance the effectiveness, I attempted to keep the different groups involved in the research engaged and informed at all stages. I had to be able to show how to improve what we were doing in the Academy and of even greater importance back up my claim that I knew what I was doing. This would then position me as a researcher, that is, not telling my staff 'what to do' but engaging them in the journey of discovery. As the leader I was conscious of the potential tension however, the process used was transparent and

all participants were empowered to contribute honestly and without anxiety. Staff were updated on the progress of the research during meetings and their ongoing views and contributions were part of the reflective process I engaged in. The structure for the initial stages of the research with relevant dates for implementation is detailed in Appendix 2.

Action Research Layer 1

This action research layer was designed to answer the following questions:

1. *What do able students perceive to be 'effective challenging activities?*
2. *What do teachers of able students perceive as effective challenging activities?*
3. *How far do the views of students and staff compare?*

I felt that it was appropriate first of all to investigate the perceived 'lack of 'challenge' in the way able students were taught. A purposeful sample was used which included able students from Years 7, 9, 10 and 11, without attempting to build a fully representative sample (Taber, 2007). I decided to select one hundred students from the teaching groups of four members of the Learning Community. These groups were selected as I was keen to work with the students who were taught by the staff who had taken an interest in participating in the study. Questionnaires were used to gather information to answer the three questions listed above. Content and layout was reviewed with the Learning Community prior to use with students. This proffered an opportunity for eight colleagues to become more participatory in the action research – their engagement, views and feedback would be critical to the success of the study. Their practitioner experience was brought to bear so that the style of questioning was improved to ensure the questionnaire would be 'user friendly' for students (see Appendix 4 [first draft] and Appendix 4a [final version based on teachers' feedback]). On reflection, I should also have piloted the questionnaire with students to ensure the content was appropriately worded for the study. However I did take the opportunity to gain the views of staff through a democratic process of sharing the first draft of the questionnaire (Appendix 4). I had made the decision about the questions I would use but explained to the staff that I would value an honest debate about the content of the questionnaire. They felt reassured and contributed to changes in the wording of one of the questions and also the layout, ensuring it would be accessible to students (Appendix 4a). At this stage my approach

was participatory with the staff and less so with students. I visited each of the four higher ability participating groups (Year 7 Maths, Year 9 English, Year 10 Geography and Year 11 Science) to explain the purpose of the questionnaire (colour coded for each year group to ease analysis) and the expectations for its completion. I then left the teacher (member of the Learning Community who had agreed to participate) in charge to begin the process which started with a brainstorming activity (Figure 4.1) designed to stimulate the students' interest and views prior to completion of the questionnaire. The questionnaires were then completed without difficulty and returned promptly at the end of the lesson. The quantitative data elicited at this stage provided an insight into the impact of challenge on the quality of learning as perceived by the sample of students. At the outset, the use of a questionnaire appeared to be the most effective to explore the extent of students' views about the level of challenge perceived in lessons and the nature of challenging activities. Three basic types of questionnaire exist:

- Structured – the content and form of response is determined by the researcher using closed questions
- Unstructured – the content and form of response is determined by the respondent from open questions
- Semi-structured – the content and form of response is determined using a mixture of questions (Sharp, 2009, p.62).

Sharp (2009, p.68) identifies "common pitfalls to avoid during the construction of a questionnaire: ambiguous questions; unfamiliar words and phrases; vague terms; over-elaborate questions; leading or loaded questions; hypothetical questions; sensitive or intrusive questions; questions requiring recall over a period of time and the use of negatives which could make questions hard to understand". I decided to formulate a semi-structured questionnaire which catered for both closed and open questions. Using a structured questionnaire would have limited the opportunity for respondents to elaborate on their views, conversely using a completely unstructured approach would not have provided the data needed and would have proved more difficult to analyse. Response rates to questionnaires are typically low therefore the decision was taken to conduct the research during lessons rather than allow students to take them home. In constructing the first question I specifically wanted to find out the level of challenge they perceived in the lesson selected for the research. Question 2 asked about challenge in 'all lessons'. In question 3 students were given an open-ended opportunity to express

'when they felt they were most challenged'. The semi-structured approach provided a good balance enabling the students to express their views. I attempted to avoid a scenario where questionnaires may have left respondents "feeling frustrated at not being able to express themselves more openly and fully" (Sharp, 2009, p.71). I was also conscious of the difficulty in obtaining in-depth personal responses by this method and the danger of both questions and answers remaining superficial (Burton and Bartlett, 2005). The literature review outlines the concerns relating to the lack of challenge provided for able students, and questions whether teachers in the Academy are mediating cognitive development through questioning and learning tasks (see page 17). This provided the foundation for the questionnaire which allowed students to reflect on how they perceived challenge in their lessons.

To ensure the validity of data collected it was important to seek additional methods of gaining information for the study. The quantitative data provided by the questionnaires afforded a platform of information from which to extend the research using qualitative methods, for example, the focus group interviews. The interviews were planned based on my previous experience of running daily focus group sessions with students which were aimed at providing them with a 'voice' and gaining essential information about their successes and perceived development needs. Four groups of students (extracted from the four teaching groups who had completed the questionnaires) participated in the focus group interviews. The students were selected by the teacher in charge of the group who ensured an even gender balance. Each group also had students of a similar age. I prepared the following four questions in advance of the interviews:

1. How do you think your teachers 'challenge' you to be the best that you can be in lessons?
2. What activities 'challenge' you most in your lessons?
3. Which lessons do you feel 'challenge' you the most?
4. Are there any activities you would like introduced (in/out of the Academy) which would provide you with greater challenge?

The first question had been designed to encourage the students to think more specifically about their teachers and the strategies that were being used for them as individuals. For example, 'praise' could have been a tactic which added to the level of challenge. Question 2 would draw out particular subjects and discussion would encourage students to refer to particular strategies used within lessons. The third question pushed for

reflection across the range of subjects, highlighting lesson(s) which stood out as providing the greatest challenge. Finally, I wanted to discover whether there were activities we had not considered in our planning – this could provide new avenues for future curriculum development.

The students were allowed to add other points, giving them the freedom to express their views without too much deviance from the key areas of research. I had to balance the students' desires to use the opportunity of speaking to their Principal as a way of airing views that were important to them, with the need to ensure staff were not named individually. At the outset of the process I explained the importance of not referring to individual staff and this was adhered to throughout the focus group sessions. This research strategy proved to be a time consuming approach with the added risk of interviewer bias as there were students in the Year 10 group who I had taught within my Business Studies group. Focus group interviews were born in the late 1930s by social scientists that had doubts about the accuracy of traditional information gathering methods. I took care to design the interviews so that different perceptions and points of view were nurtured and used to gather information for discovery, bench marking, evaluating, verifying perceptions, feelings, opinions and thoughts (Patton, 1990). The uniqueness of the focus group enabled data to be generated based on the synergy of the students' interactions (Green, Draper and Dowler, 2003). The members of each focus group were made to feel comfortable with each other and engage in discussion. They were provided with a comfortable environment and refreshments. A clear explanation of the purpose of this research strand was shared with the students and prior to the start of the session checks were made to ensure parental permission had been received and also that each student was still willing to participate. Focus group interviews range from fully structured to open, with variations between these two extremes (McNiff and Whitehead, 2010). A semi-structured approach was taken to the focus group interviews allowing the students to take a role in setting the agenda. Although I had set questions I enabled the students to add to the debate as the discussion evolved, an approach which closely resembled a conversation, with the interviewer working from a relatively loose set of guidelines (Brown and Dowling, 1998). As a powerful insider the students wanted to tell me things, and that is exactly the approach I needed, to ensure they felt comfortable

in sharing information within the parameters of ethics. The questions were kept open and the format flexible.

Prior to the focus group session a discussion had taken place with the Learning Community to establish the extent of 'challenge' being provided in their lessons (Appendix 1: Reflective Journal - entry 1). Following the discussion students were asked individually to brainstorm how their teachers challenged them 'to be actively involved in their lessons'.

The focus group sessions enabled me to unravel the issue of challenge and discover exactly what this meant to the students. They needed to understand the deeper meaning of challenge and this was articulated at the start by using concrete examples of deep questioning and peer related activities. I began to help the students understand the deeper meaning of challenge and ensured, by using examples, that 'challenge' was not seen simply as additional work or extension tasks. During this activity it became clear that students were beginning to show curiosity in the points being highlighted by their peers and upon analysis of the brainstorm activity similar ideas had emerged. A key component in conducting successful and productive focus group interviews is identifying appropriate and informative questions to be asked of the participants. The questions should clearly define the purpose of the research. The focus group interviews developed into the discussions that had been anticipated, allowing students to express their views freely. They remained confident throughout without the slightest indication that the recording had inhibited them in their responses – each student displayed an energy and urgency to contribute.

The tape-recording turned an ephemeral spoken event into a relatively stable object proving to be efficient and effective (Graddol, 1994), allowing for repeated replays at times when I needed to review points being made. The enthusiasm in the students' voices further empowered me to action their views. A stand-alone written version of their views would not have held the same power and driver for change as did the recording. However, on reflection, a degree of note-taking would have been beneficial to capture the body language and interaction of the students – the heightened voice tone of some of the comments made confirmed the strength of their viewpoints. I could have considered a video recording of the session but had decided that this had the potential to unnerve

the students with the added possibility of biased outcomes. Elsbach (2000) refers to a focus on behaviours, looking more at what people do in an interview rather than what they say. Sharp (2009, p.80) refers to the "richness of data provided …, and the recording of events which helps to reduce major sources of potential interviewer bias by addressing the conscious and unconscious selection of material you note down or, indeed, forget to note down". Parameters had been clarified, for example, not to mention teachers by name. Students were clearly tempted and looked for ways to raise awareness of teachers by manipulating their input in a coded statement. The position of the researcher as the Academy Principal potentially provided an opening to express their concerns; however this door had to be closed in order to keep within the boundaries of the ethics surrounding the project. The broad theme of the focus group discussion once shared, kick started immediate responses without the need to encourage participation. It was important to introduce the topic for discussion and then strive to minimise intervention. Students were guided into the discussion beginning with a general question first, used to stimulate discussion (see page 55). As the participants began to share ideas I was able to move through the group, ensuring that each student had a chance to be heard. However, there had to be an element of tactful quelling and rerouting of students who displayed signs of going off track due to their eagerness to put their views across and have their voice heard. In addition, an element of probing developed to explore some of the issues arising. Snowballing became apparent where one student's comments triggered a response from another person, for example, response 2 in the Year 10 Focus Group interview was prompted by the comment made by the first student:

> Response 1: The assessments because you try be as good as you can be and better than your friends.
>
> Response 2: I think they challenge us quite well. What challenges me the most is when we do tests and timed assessments.

This ensured a lively discussion highlighting the confidence of the students. Each session took between 25 and 45 minutes and proceeded without interruption. During the focus group interviews it was essential for me to maintain eye contact, listen carefully and remain attentive at all times and in doing so I was able to "probe more deeply and … allow interviewees to elaborate, explore and explain more fully" (Sharp, 2009, p.75). By adopting a neutral tone of voice and being aware of the impact of my body language I

worked hard to engage students showing a genuine interest in what they had to tell me. At the end of the Year 11 focus group Interview session, one of the students thanked me for giving her the opportunity to 'have a voice' and this was quickly echoed by other students. There was always the potential for respondents to feel uneasy and therefore not be willing to contribute, fortunately this did not materialize. Had this position arisen I would have looked at the availability of other students in the nominated groups. At the end of each focus group I reflected and considered how the subsequent session could be improved. The main area for development centred on my own encouragement and reassurance to the students about the freedom to express their views. Also an element of steering the conversation when I felt that the direction began to move off track, for example, a reassuring reminder of our theme and an encouraging acknowledgement of their contribution. A major issue with this method proved to be the time consuming nature of the transcription required for each of the focus group interviews, a concern highlighted by many writers in this field. A key strategy for sifting through the data had to be coding which I used to effectively sort the key issues arising. I colour-coded key patterns, themes and categories arising in the transcriptions, for example, frequently occurring terms such as 'creativity', 'thinking outside the box', 'hot seats', 'questioning'. When specific subjects were mentioned they were also coded appropriately. This enabled quality comparisons to be made and questions to be asked which helped in recognizing cogent themes in the data (Strauss and Corbin, 1990).

The use of lesson observations as part of this first layer provided a further research method, enabling sharing of best practice and the provision of insights into the level of challenge experienced by students who had been engaged in both the questionnaire and focus group interview strands of the research. I sought to articulate challenge in their lesson, for example, the use of higher order questioning and tasks which pushed the students beyond their current levels of performance. Prior to the lessons I discussed with the staff the importance of an open approach to planning and delivery rather than being fixated with the typical Ofsted criteria. I wanted to see staff taking risks and doing things differently. By positioning their classroom practice under the spotlight the ethical issues became evident in relation to their own performance. However I gave staff the reassurance of full confidentiality of the material produced (written and video). The opportunity to share practice is a most effective path to driving forward improvement in

teaching and learning and achieving the high quality referred to. Ofsted (2010, p.144) cited the importance of teachers continually developing their practice:

> The drive to identify what works best, assessing the impact of programmes, lessons and other experiences, should be relentless. Effective schools have mechanisms for sharing good practice as part of in-school professional development focused on improving the quality of teaching.

Prior to the observation each teacher submitted a lesson plan – four of the eight members of the Learning Community participated ensuring coverage of Years 7, 9, 10 and 11. The four observations were conducted with another colleague using the Academy's Learning Studio which facilitates the recording of lessons. The open-ended focus for each observation was the level of 'challenge' and type of 'challenging activities' used in the lesson. Structure, through the use of a pre-existing schedule was avoided. However the open-ended nature of the observation produced useful hunches, for example, questioning strategies and peer directed activities which still needed to be triangulated against other sources (Taber, 2007). Having a second person to observe added to the validity as did the recording studio. Students were unaware of our presence which safeguarded the 'near to normal' environment intended for the research. Parents/carers of all students are informed annually of the recording of certain lessons and given the opportunity to 'opt out'. All students in the observation groups were checked on the Academy's administrative system to ensure the 'opt out' did not apply to any individuals. The importance of observation as a means by which we come to understand our world, the type of phenomenon to be observed and the perspective of the observer will be key factors in determining how we actually organize and carry out the observation (Burton and Bartlett, 2005). The approach taken, cited by Lewis, Perry and Murata (2006, p.4) resembled that of 'Lesson Study', a "Japanese form of professional development centering around collaborative study of live classroom lessons, regarded not as an end in themselves but as a window on the larger vision of education shared by the group of teachers, one of whom agrees to teach the lesson while all the others make detailed records of the learning and teaching as it unfolds". These data are shared during a post-lesson colloquium, where they are used to reflect on the lesson and on learning and teaching more broadly. The range of evidence provided a good platform to begin searching and analyzing the data, interpreting them, and selecting those pieces that highlighted the realisation of values (McNiff and Whitehead, 2010). At the end of

each observation we arranged a suitably convenient time to review the recording and debate the 'challenge' perceived in the lessons. During the observations there were also opportunities to look at particular events in detail as they occurred, using the camera facility's 'home in on' techniques to monitor certain students or groups.

Maintaining a complete record of the research (all questionnaires, records of observations, transcriptions of focus group interviews and my reflective journal) undertaken has provided a detailed audit trail for future reference.

Gillies and Alldred (2002, pp.43-6) claim that research risks being an intervention in people's lives (i.e. a potential abuse of power), and the researcher typically plays a significant, if not central, role in initiating, facilitating, crystallizing and developing the meanings involved in, or stemming from, the research, i.e. the researcher is the one exercising the power. This point needed caution in my particular role as it was important for me to gain the trust of the teachers and students. The students were keen to engage and had no issue with their Principal as researcher, in fact, they enjoyed the opportunity to contribute to research, and to have their views heard. From the start I made it very clear that the teachers' contributions were valued and the fact that I was taking a different stance to the typical traditional research (which is usually conducted from an 'outsider' perspective). Each teacher involved became an aspirant – in control of their own practice with the responsibility of offering explanations for that practice (McNiff and Whitehead, 2010).

At the conclusion of the first action research layer I reflected on data obtained from the four year groups. It was apparent that over 50% of the Year 10 group indicated a lack of challenge in their ILTs. The decision was therefore taken to refine the research and focus on this issue. Year 10 has a tendency to be the time when an emphasis is placed on coursework completion, and it is this element that often drives independent learning tasks resulting in a menu of 'sameness' for students. Creativity can often be missed as teachers pursue this critical element which contributes to overall examination performance and ultimately their own teacher residuals. In the category of activities providing the greatest level of challenge ILTs proved to be the 4th most popular option from a choice of twenty – the exception being the Year 10 Geography group with only 47% citing this option as challenging (Figure 4.4), which accords with the emphasis

placed on coursework completion. The issues arising had been alluded to when reviewing the vast array of literature: for example, the Ofsted outcomes referred to in Chapter 2 supported my initial findings and provided the platform for further qualitative investigation. The data generated from my research offered 'insights, hypotheses, and generative questions that were pursued through further data generation. As tentative answers to questions were developed and concepts constructed, these constructions were verified through further data collection' which would evolve through the second layer of action research (Schwandt, 2001).

Action Research Layer 2

The second action research layer focused on a specific group of students and their teacher. The research question to be answered in this layer was, 'How do teachers effectively enact challenge in Independent Learning Tasks (ILTs) where achievement is already high?' This question emerged following the evidence of limited challenge provided by the Year 10 students during action research layer one.

The qualitative approach taken in this second layer was critical to engaging the respondents and gaining the necessary data. The insights of teachers and their students cannot be underestimated and the importance of the contribution they make to knowledge should never be underrated. MacGarvey (2004) compares teacher researchers to gardeners nurturing new plants and shares her experience of working with teachers who are enthusiastic about practitioner research, are keen to test out theories about learning styles and motivational strategies, and interested in methods of investigation (Koshy, 2010, p.xi). Our students have a tremendous capacity to shape their own learning thus contributing to the knowledge held by their teachers about effective teaching and learning and this view is recognized in the 2010 Annual Ofsted report:

> Pupils readily value the efforts of schools to improve and are key partners in helping this to happen. They and their aspirations are central to the process. Their views, feedback and ideas are as important to the healthy school as those of its staff. Crucially, they have an important role in contributing to the learning of each other (Ofsted, 2010, p.144).

In working with the students and their teacher, practices, understandings and situations would be explored using a critical participatory approach to the research. The participants would become "interlocutors who open up communicative space in which they encounter one another in a slightly unusual and slightly formal way" (Kemmis, 2008, p.127).

This second layer involved a 'thinking skills bubble' (Figure 3.5) from which students were required to comment on the 'thinking skills' used when completing their ILTs.

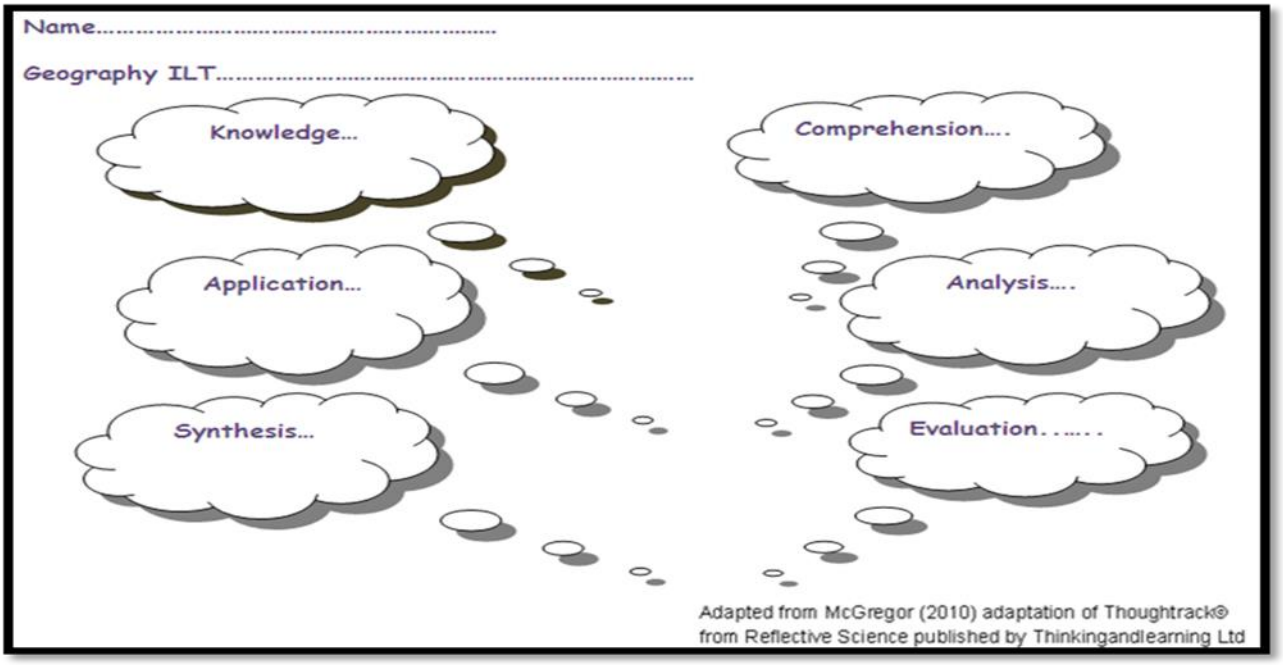

Figure 3.5 Thinking Skills Bubble Diagram (Version 1)

This method had been selected to provide a simple mechanism to gather and analyse the students' individual views on 'thinking skills'. On reflection, this task proved difficult for the students due to limited understanding of the terminology used. The class teacher fed back the concerns during a discussion about the difficulties encountered (Appendix 1: Reflective Journal - Entry 20). The process could have been better introduced if I had been present during the session to provide a more appropriate conceptual framework for the group to work with. Instead, I relied on the class teacher to launch the task. This was done without full ownership of the purpose behind the task and in the students' eyes the teacher did not provide a substitute for the Principal in explaining the task.

As the researcher, I was at fault, and the lack of careful preparation became evident in the limited outcomes of the student activity. Elliott's (2007, p.233) challenge of Becker's (1998, pp.90-91) 'hierarchy of credibility' as applied to classrooms, where teachers are regarded as having more credible knowledge about what goes on in classrooms than their students is insightful. I had assumed that my strategy would work with the students, clearly 'credible knowledge' was questionable on this occasion.

A period of reflection prompted the decision to develop a 'student friendly thinking skills bubble' moving the research into a third layer (Appendix 1: Reflective Journal - Entry 20). This element had to be delayed until the students moved into Year 11 due to the timing of assessed coursework. Initially, I had some concerns about the gap in the research process but had to be considerate to the students' stage in their GCSE preparation. Therefore I could not introduce any additional activities which had the potential to impinge on their lesson time and ultimately jeopardise their success.

Action Research Layer 3

The third and final layer in the action research process further elicited students' views via both a quantitative and qualitative approach. The specific research question to be answered was repeated from layer 2 as I had not been able to gain the insights I had hoped for at that stage, 'How do teachers effectively enact challenge in ILTs where achievement is already high?' I had maintained a dialogue with the teacher following the conclusion of the second action research layer and had discussed and shared the process for redesigning the 'thinking skills bubble'. The teacher also shared her thinking on the design of the ILTs (during a meeting to prepare for the next stage of the research) and was able to articulate how she intended to increase the level of challenge in the second ILT task (Appendix 1: Reflective Journal - Entry 34). This engagement with the teacher encouraged her to reflect on her own practice in relation to the design of learning activities. It was also important at this stage to re-engage with the students by revisiting the purpose of the research and re-iterating my appreciation of their collaboration with the study. I was keen to understand their views on their participation and answer any questions arising. They valued the opportunity to be involved in shaping changes which would lead to improvements in the quality of their learning experience and were very enthusiastic about continuing to support the research process. Knight and Lewis (1993,

pp.41-42) reject the behaviourist canons which fix student behaviour and cognitive development as an orchestrated aggregate of responses. They propose an "ecological theory of values" arguing for problem-based interactive curricula and pedagogies that enable students to shape both the organisation of schools and their own behaviour to improve and negotiate the social contract (Slee, 1994). When conducting my research it was important to 'get inside' the student's view of a challenging ILT and to 'understand from within', and 'resist the imposition of external form and structure, since this reflects the viewpoint of the observer as opposed to that of the actor directly involved' (Cohen, Manion and Morrison, 2007, p.21). The students were engaged as full persons, with the exploration based directly on their understanding of their own actions and experience, rather than filtered through an outsider's perspective. As a practitioner researcher I appreciated my role in the company of others, horizontally in current time and space, and vertically through time and influence' (McNiff, 2010). The process empowered the students as they could see that they were capable of constructing and using their own knowledge and this has proved to be the case through my own action research (Freire, 1970; Reason, 2005). I expressed the value I placed on their feedback about the first version of the 'thinking skills bubble' explaining how I had taken on board their views in the redesign process. The final version was developed from some of the work of McGregor (2010), Bloom's Taxonomy and the revised taxonomy of the cognitive domain (Figure 3.6) following Anderson and Krathwohl's model (2001) cited in Atherton (2010). Each thinking skill was presented as a question with supporting examples to aid the students' comprehension of the task. The use of colour, graphics and clear terminology also contributed to a successful outcome from this method. The students were provided with two ILT tasks which had differing levels of challenge and then asked to complete 'thinking skills bubbles' for each of the tasks. The first task involved gathering information and putting together a summary. The second ILT utilized the full range of thinking skills and required peer interaction. Students were also asked to answer two short questions providing access to further data:

1. Was ILT 2 more challenging than ILT1? Explain why.
2. How could the task be made even more challenging?

This was then supplemented with an audio recorded group discussion involving three boys and three girls.

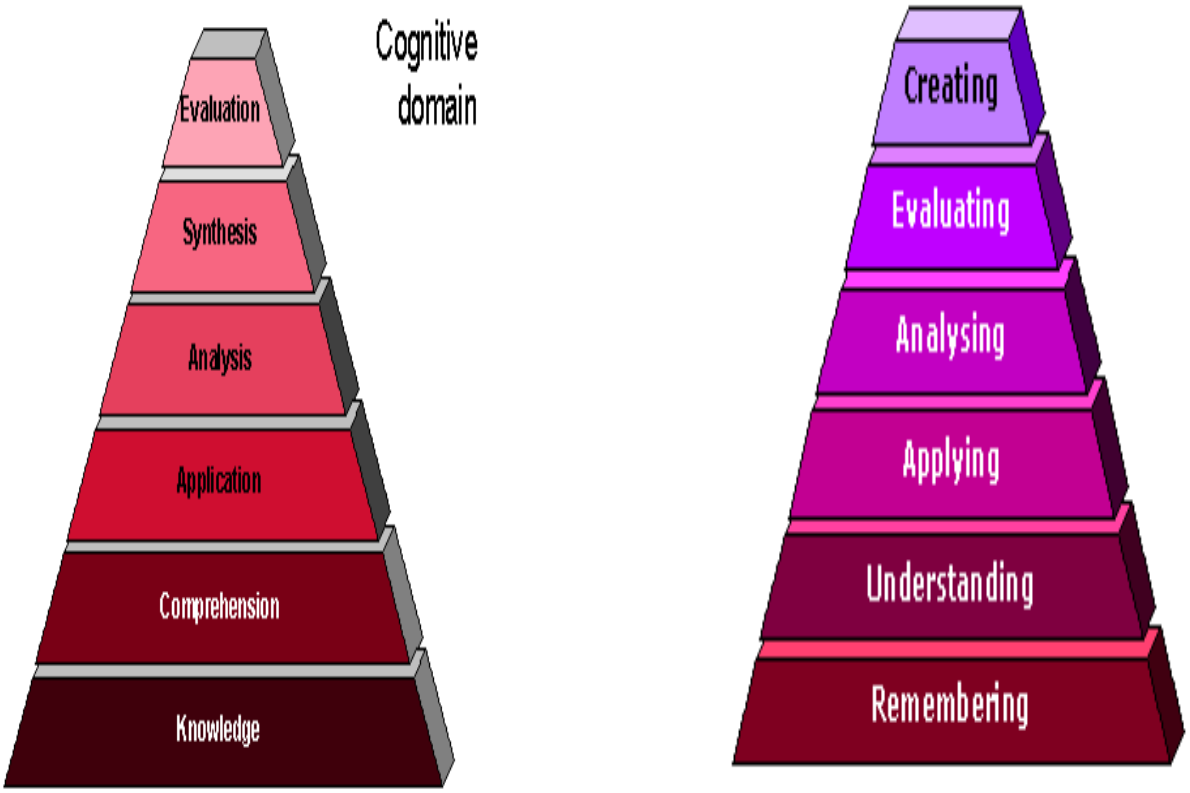

Figure 3.6: Bloom's Taxonomy and the revised taxonomy

The students embraced the task with energy, enthusiasm and a real sense of purpose (Appendix 1: Reflective Journal - Entry 36). By providing greater clarity and background to the task, the students had embarked on the activity with confidence and were able to successfully complete the thinking skills bubble. The importance of reflection and the subsequent action on reflection provided the foundations for a successful third action research layer. By listening to the students and the member of staff I had been able to take on board their views and reconstruct the research tool. This prompted critical participatory research into my own practices not just to 'perfect' or improve them, but also in the interests of acting rightly in terms of the potential consequences of my actions. The detail of the approach and the outcomes is outlined in Chapter 4.

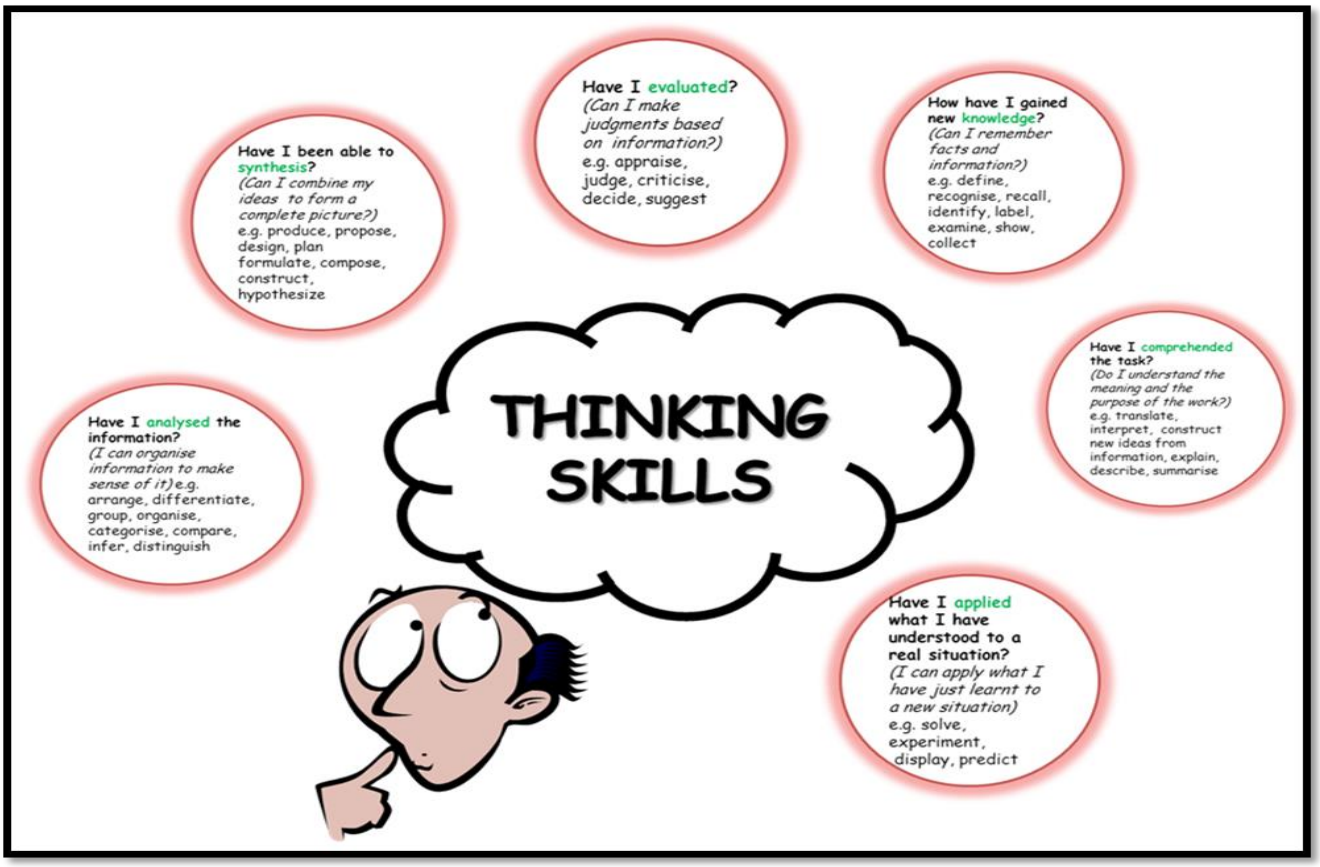

Figure 3.7: 'Student Friendly' Thinking Skills Bubble (Final version)

Summary of the 3 Action Research Layers

As the research evolved one issue formed the basis of another and, as one question was addressed, the answer to it generated new questions (McNiff, 2010). This cyclical action which has been represented as a series of layers (see Figure 3.8) resulted in a shift in the focus of the enquiry and as I moved from one layer to the next the size of the layers reduced. The first layer started with a wide perspective as I tested different research methods and considered the issues. I questioned whether the research strategy was appropriate at each stage and amended accordingly.

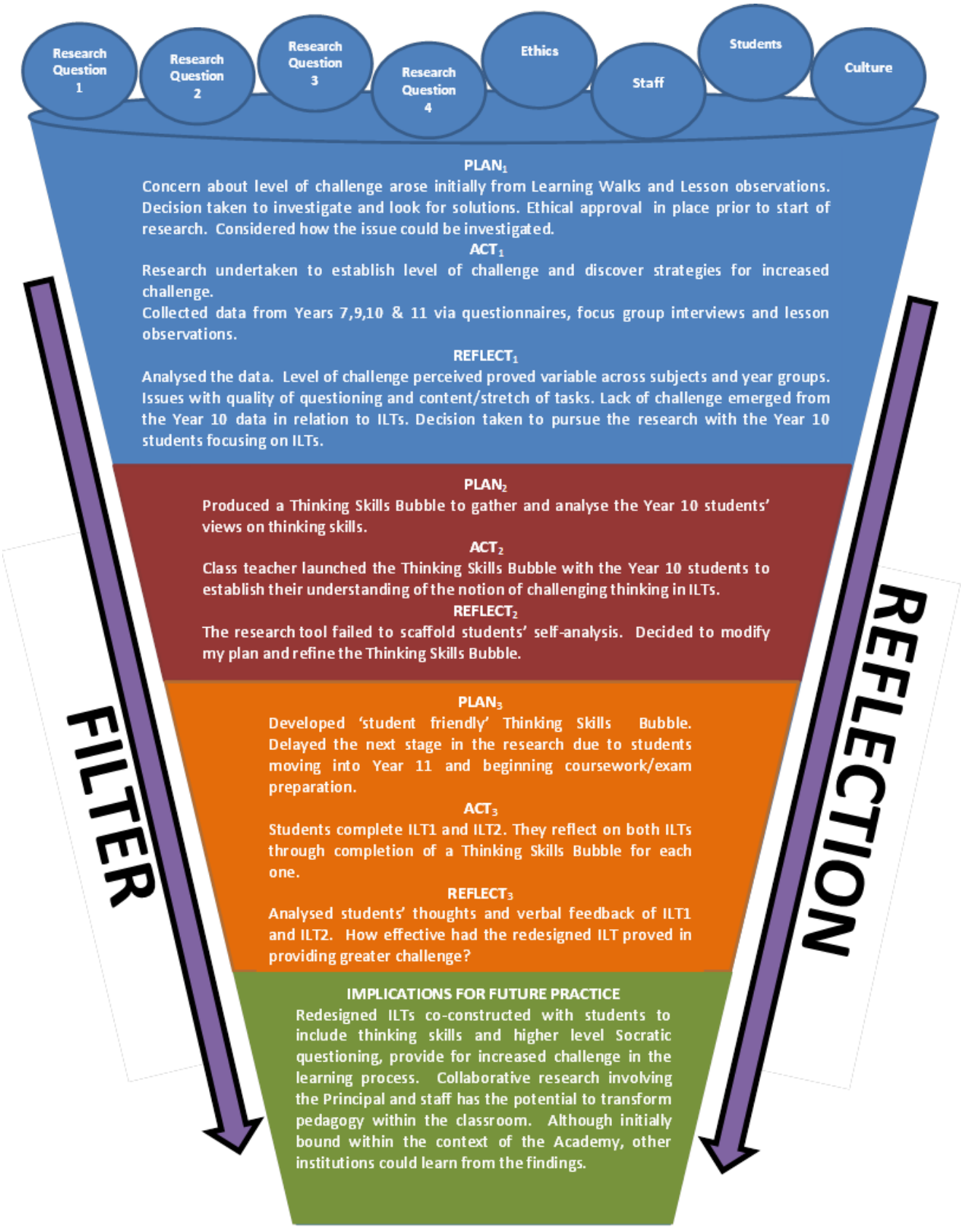

Figure 3.8: My Action Research Process

A strength of the action research methodology used is its responsiveness to both a quantitative and qualitative paradigm and it is this “very flexibility and unwillingness to be positioned in one theoretical camp or follow one methodological approach that leaves action research open to criticism” (Wilson, 2009, p.195). Cousin (2009, p.2) adds further ammunition suggesting that “the good researcher knows how to play around with many possible approaches in a spirit of curiosity about what they can yield. In this age of emancipation this spirit promises to replace the immaturity of paradigm warfare”. Sharp (2009) stresses the ‘knowledge for action’ required at the ‘chalk-face’ is now more readily available than at any time in the past. He further suggests that the emergence of the action or practitioner researcher, with an emphasis on self-reflective and evidence-based enquiry, has proved liberating, providing teachers with a facility to make informed decisions for themselves and others. As I progressed through the three action research layers the constant reflection and subsequent review of approach continued to filter and add strength to the quality of information collected. At the outset of the journey I had anticipated a relatively simple process of action research not realizing that the early stages would reveal ‘bumps’ in the road resulting in review and the establishment of fresh layers of action. I had naively assumed that I would find the answers to my questions at an early stage in the research. Through a process of reflection, I had to adapt to the unexpected findings. My focus on challenge would be more finely honed to look at task design – with a shift from students learning independently (homework) to a more socially constructed environment within their classrooms.

An example cited by Swantz (2008) in which participatory action research had to be of immediate interest to the people in the studied community, involving them in formulating the study problems and in finding solutions mirrored my own approach and has similarly prepared the way for further research. The need for the researcher to be open to learn from others, adopting a genuine learner’s attitude is in tandem with my style. Action research is a bottom up approach of reflective practice creating theories that contribute to reflection and emancipation, to the involvement of all stakeholders (Altrichter, 2005) and I have been able to demonstrate this throughout the study.

3.6 Research principles

Heikkinen *et al.* (2011, p.5) ask the question "how do we know someone is doing good research?" They also question whether there is a "difference between doing good research and reporting it well". They propose five principles for validating research (Figure 3.9) indicating that these should lead us through the whole research process. As I reflect on my own research approach the principles are in tune with the critical areas of investigation and outcomes applied throughout the study.

Validation principles for action research

1. Principle of historical continuity
Analysis of the history of action: how has the action evolved historically?
Emplotment: how logically and coherently does the narrative proceed?

2. Principle of reflexivity
Subjective adequacy: what is the nature of the researcher's relationship with his/her object of research?
Ontologic and epistemologic presumptions: what are the researcher's presumptions of knowledge and reality?
Transparency: how does the researcher describe his/her material and methods?

3. Principle of dialectics
Dialogue: how has the researcher's insight developed in dialogue with others?
Polyphony: how does the report present different voices and interpretations?
Authenticity: how authentic and genuine are the protagonists of the narrative?

4. Principle of workability and ethics
Pragmatic quality: how well does the research succeed in creating workable practices?
Criticalness: what kind of discussion does the research provoke?
Ethics: how are ethical problems dealt with?
Empowerment: does the research make people believe in their own capabilities and possibilities to act and thereby encourage new practices and actions?

5. Principle of evocativeness
Evocativeness: how well does the research narrative evoke mental images, memories or emotions related to the theme?

Figure 3.9: Five Principles for the Validation of Action Research; (Heikkinen et al., 2011).

In conducting this research I had to recognize the responsibility of adopting a professional commitment to the validity of the study, that is the extent to which the findings accurately described reality and the implications for future pedagogy. Credibility, then, became the test for this (Hoepfl, 1997) depending less on sample size and more on the richness of the data collected and its analysis (Patton, 1990). Also, my own

credibility as a researcher was important in relation to the claims to knowledge which relate to criteria which I consider important, that is, at a "social level" (McNiff, 2013, p.140).

Triangulation

Triangulation is a widely endorsed strategy for strengthening the internal validity of qualitative studies in social science. It is based on the principle of confirming findings through the use of multiple perspectives (Wilson, 2009) and involves the use of more than one method of data collection, or more than one observer in the research or drawing on both quantitative and qualitative approaches (Robson, 2002). The use of triangulation strengthened my research, contradicting the view held by Silverman (2001, p.233) who cites it as "potentially problematic and inappropriate in qualitative research as it contravenes the ethnographic perspective in which the context of each method used is of intrinsic value, that is, it is subjective and depends on individual viewpoints". This was not the case since by using a variety of methods I was able to confirm and interrogate further the emerging data. For example, focus group interviews were used as an additional research method, providing flexibility and the opportunity for the students to discuss their interpretations of the world in which they live, and to express how they regard situations from their own point of view (Cohen, Manion and Morrison, 2007).

Ethical Considerations

Before embarking on the research I needed to be clear about the likely impact on the work of my students and colleagues, and in doing so ensure that the "usual standards of research ethics … were observed: permissions obtained, confidentiality maintained, identities protected" (Denscombe, 2002, p.63). The need to conduct my research to the highest ethical standards would ensure respect for all participants. Ethics is concerned with ethical principles and adherence to professional codes. These principles need to be at the centre of data-gathering, data analysis and the writing up of findings (Koshy, 2010). Simons (1995) describes ethics as the search for rules of conduct that enable us to operate defensibly in the political contexts in which we have to conduct educational research. Important codes of practice and guidelines are published by research associations, for example the British Educational Research Association (BERA, 2011). BERA's ethical guidelines are devolved into: responsibilities to the research profession;

responsibility to the participants; responsibility to the public; relationships with funding agencies; publication; intellectual ownership; relationship with host institution (Cohen, Manion and Morrison, 2007). These guidelines reflect the sort of values which ought to pertain in a democratic society amongst which 'openness' would seem to be one (Pring, 2004). They clearly articulate that educational researchers should operate within an ethic of respect for any persons involved in the research they are undertaking. Individuals should be treated fairly, sensitively, with dignity, and within an ethic of respect and freedom from prejudice. Voluntary informed consent contributes to the bedrock of ethical procedure (Cohen, Manion and Morrison, 2007). Fine and Sandstrom (1988) advise that while it is desirable to lessen the power differential between children and adult researchers, the difference will remain and its elimination may be ethically inadvisable.

A critical factor at the outset of the research idea was first to ensure that I had approval from Wolverhampton University and then once agreed to negotiate access with key stakeholders. My first approach was to the Sponsor of the Academy to ensure that he understood the purpose of the research and the need for me to balance the work to be done in establishing the newly formed Academy with the ongoing demands of the proposed study. In my role as Principal of the Academy, access to the organisation did not present an issue. However before embarking on the research, agreement was obtained from the Governing Body. With the support of the Sponsor and Governing Body, I then proceeded to obtain permission from members of the Learning Community and clarify their role as participants and co-researchers. As a large number of students were involved I then needed their agreement to participate and of course permission from their parents/carers. Written approval was obtained from parents following a letter (Appendix 5) outlining the purpose, content and procedure of the research. I appended a simple ethics statement (Appendix 5a) to the letter (adapted from McNiff and Whitehead, 2010, p.81). BERA (2011) also requires researchers to comply with Articles 3 (protecting the best interests of the child) and 12 (granting children the right to express their views freely) of the United Nations Convention of the Rights of the Child. I ensured that the students' role in the research project was clearly explained and an assurance given that they could 'drop out' of the process at any time. Early planning and foresight proved beneficial as the research unfolded. An assurance of confidentiality was provided, protecting the contributions made by respondents.

The focus group sessions were tape recorded which may have been considered intrusive. However, as a structuring device, the use of a recording instrument signals that the data are public and therefore subject to the rules which structure public discourse (Scott and Usher, 1999). All students were given the choice to participate and the reassurance of being able to withdraw if they felt uncomfortable at any point during the session. The students may already have felt some apprehension, therefore the decision not to add to the number of adults in the room made good sense. The recording did not appear to inhibit the students in their discussion and therefore the decision not to use note taking as an alternative proved positive and avoided the introduction of formality. It was essential to store the recorded information on a stand-alone device rather than the Academy's networked system in order to keep the data secure. The use of the Academy's Learning Studio to video record the four lessons required a full check on the students' annual video recording permission/opt out return (see Appendix 6). Although the participating staff gave verbal approval to be videoed I checked that they had returned the staff permission/opt out form (Appendix 7).

3.7 Methodology summary

An action research methodology, "how we do things" (McNiff, 2013, p.27) is used by the practitioner researcher who wishes to be directly involved in the development of practice in their field, through rigorous and valid research. It is ". . . a process that helps you, a practitioner, to develop a deeper understanding about what you are doing as an insider researcher" (McNiff, 2007, p.13) and "provides an inside-out approach to professional development, reflective teaching, and collaboration" (Sezgi Sarac-Suzer, 2007). Through this approach I have been able to effectively begin to narrow the gap between practice and theory in my organisation.

A major consideration, as the Principal of the Academy and the researcher, was the implication of engaging in collaborative research, given the power relationships involved in terms of access to knowledge. All individuals have the capacity to contribute to the process of knowledge generation who also have the right to play an active role in shaping policies and processes that affect them (Brydon-Miller, 2006). I wanted the staff to be assured that they had my full support in risk taking and trying out new strategies and I share McNiff's view (2013, p.140) that "social hope is about the realization of

human nature and capacity – and the need for attachment supported through dialogical forms of communication." As a Principal who continues to teach I have the credibility when working with staff – therefore just as the staff may have felt their skills were being exposed I also shared that exposure.

In developing the action research journey I hit roadblocks along the way, one being the immense time commitment which should not be underestimated. In an attempt to accelerate the pace of the research I did not adequately test all of the methods, for example the questionnaire and the first thinking skills bubble. This resulted in delays but also acted as a lesson for future research.

Ultimately the success of my work and the ability to share the findings are dependent on the application of good research principles which I have observed throughout the study. I have engaged pro-actively in the process of teaching and learning, working collaboratively with staff and students to establish how challenge can be more effectively embraced. By considering contributions from different perspectives I have ensured a solid foundation for the research.

Chapter 4

PRESENTATION OF EMERGING THEMES

4.1 Introduction

This chapter presents what I discovered about my staff and students' views about the level of challenge present in classroom activities. When looking at the emerging themes I consider whether there is synergy between the views of teachers and students, and also look at how challenge can be enacted through Independent Learning Tasks when achievement is already high. It was important to establish student's perceptions of challenge through a combination of qualitative and quantitative data (questionnaires, focus group interviews and written interpretations). The Learning Community, as key participants in the development of pedagogy across the Academy, were asked to participate in the action research through discussion and lesson observations. As classroom practitioners I was keen to involve them in exploring the issue of challenge rather than observe wishing not to disturb the scene (Macintyre, 2000, p.xii). Through a process of review and reflection the research flowed through three layers with changes in direction that I had not anticipated.

Prior to the start of the research my experience of participating in Learning Walks had revealed a compliance culture in many of the classrooms visited. The following aspects contributed to this culture:

- Majority of lessons dominated by teacher direction
- A high proportion of closed questions directed by the teacher
- Regular use of textbooks and worksheets often used on an individual basis
- Reluctance by students to challenge teacher if unsure about aspects of the learning experience
- Simplistic tasks with limited opportunities for students to engage in peer dialogue and debate
- Assessment for learning driven by the teacher – limited examples of a shared dialogue in the feedback process

Although Learning Walks occupied a short period of time with each group, typically ten minutes (Sample proforma: Appendix 3), this still gave a flavour of the pedagogy. All members of the Senior Team and Middle Leaders were included on the Learning Walk rota, with findings collated on a weekly basis and disseminated to curriculum teams.

Evidence of student progress could be determined through the quality of questioning and subsequent responses. Their engagement in tasks and success in meeting the expectations of the work enabled further measurement of their progress. Lessons provided limited opportunities for students to be proactive in their learning or to develop thinking skills and their engagement in co-constructed activates was extremely rare, in summary, opportunities for them to exercise their minds through intellectual challenge proved limited (Fisher, 2008).

4.2 Findings and emerging themes from Action Research Layer 1: exploring students' conceptualisation of challenge

The increasing evidence from the Learning Walks revealed a lack of challenge in lessons and contributed to the decision to find out students' and teachers' perceptions of this. Due to the limited time spent in lessons as part of the Learning Walk process, it became important to gather more reliable data. The brainstorm exercise (Figure 4.1 – example of Year 10) was introduced to stimulate discussion around the 'challenge' theme prior to the four groups of students (Year 7 Maths, Year 9 English, Year 10 Geography and Year 11 Science) completing the questionnaire.

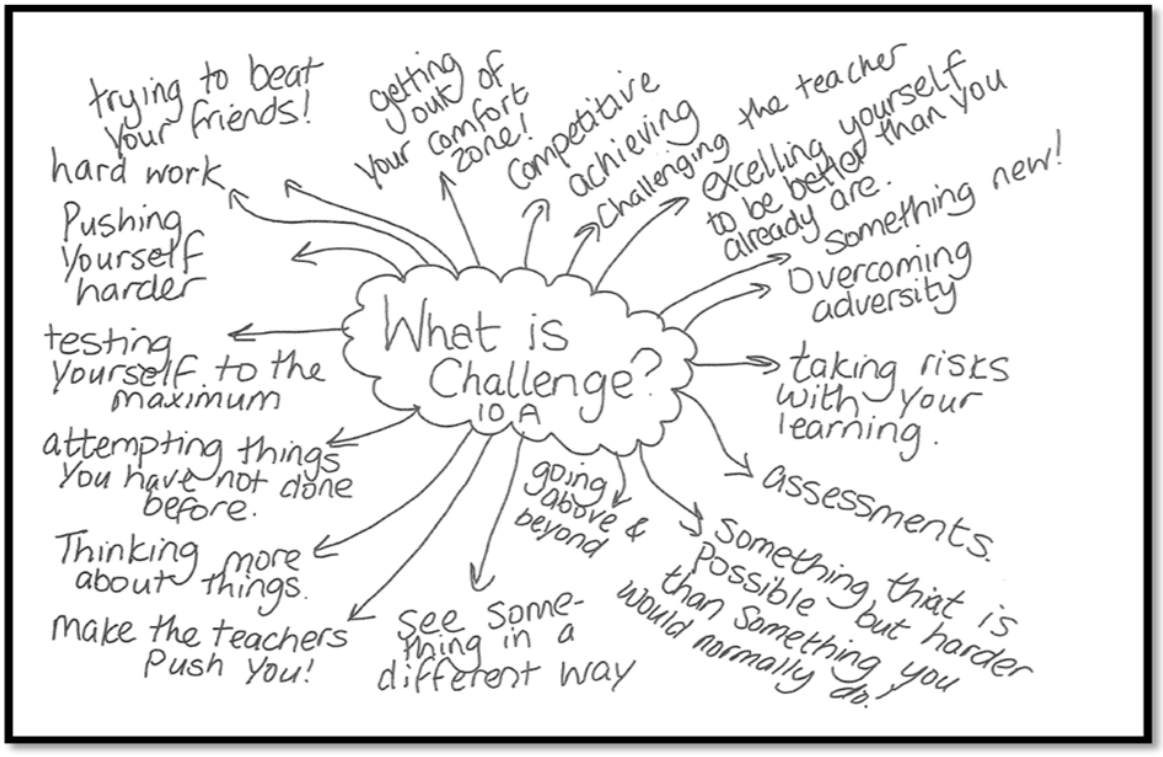

Figure 4.1 Brainstorm: What is Challenge: 10A Geography

The key themes from the four groups emerging are illustrated in Table 4.1.

Year 7 Maths	Year 9 English	Year 10 Geography	Year 11 Science
Goals	Taking risks	Taking risks	Revision/Exam Preparation
Homework	Group work	Overcoming adversity	Case Studies
Trying something new	Timed tasks	Getting out of your comfort zone	Coursework
Performing for others	Learning Objectives	Teachers pushing you	Assessment Deadlines
Doing things differently	Coursework	Attempting new things	Time Management
Pushing yourself	Tests	Hard work	Remembering Facts
Hard work	Presentations	Pushing yourself harder	Annotating
Improving yourself	Rewards	Challenging the teacher	Timed Tasks/Tests
Drama	Difficult questions	Competition	Open Questioning
Science	Pressure	Assessments	Creating own questions

Table 4.1: Summary of the 10 key themes for each group from the brainstorm activities

The overall picture emerging from the brainstorm activity suggested that students recognized that challenge is about moving out of their comfort zone, for example by taking risks, trying new things, engaging in hard work and pushing themselves (highlighted in yellow). From Year 9 onwards, that is the start of their Key Stage 4 GCSE examination work, the perceptions of challenge are biased towards the 'exam factory culture' (highlighted in blue) and this becomes increasingly evident in Year 11.

The Year 7 students made little reference to challenge in their individual subjects apart from recalling terms in Science and performing to an audience in Drama. They highlighted trying new things, pushing themselves and goal setting.

Responses from Year 9 students were similar in style with some differences including risk taking and group work – however the shift towards examination preparation begins to emerge with reference to timed tasks, revision, pressure and tests.

The data from the Year 10 group highlighted a range of situations deemed to provide challenge (Figure 4.1) including taking risks, overcoming adversity and 'getting out of your comfort zone'.

Only one reference was made to assessments with no other evidence to suggest that students viewed 'challenge' simply as 'harder tasks' which some of the research evidence indicates. This correlates with research undertaken by NACE (2007, p.11) which highlighted how differentiation, extension and enrichment strategies in lessons extended the students' range of skills and further developed the cognitive stretch in targeting thinking and questioning skills.

When reviewing the outcomes of the Year 11 findings there is a sharp change in students' perceptions of challenge when compared to students' views when they join the Academy in Year 7 (see table 4.1). The move to secondary school marks an array of change, from a large increase in the number of teachers they work with to an individual timetable of subjects – this in itself would be perceived as challenging by the students.

As students move closer to external testing the tight focus on performance in league tables drives teachers to target examination preparation and coursework completion. This culture is reflected in the results of the brainstorm activity completed by the Year 11 students. Reference is made to revision, case studies, coursework, assessment deadlines, time management, remembering facts, annotating and timed tests. In a minority of examples, students mention open questioning and creating their own questions.

As students progress through the Academy they begin with an uncluttered view of challenge as can be seen from the responses by Year 7. For example, they refer to 'pushing themselves', 'trying new things' and 'doing things differently' (see Table 4.1). This links to the findings in the DCSF report (2007) highlighted on page 32. By Year 11 the view of challenge resembles all that may be associated with an exam factory culture and the statement from one student about 'too much exam pressure' provides further evidence of the issue. In a recent report, the Confederation of British Industry (CBI) warns that the current education system – with its focus on league tables – fosters a 'cult of the average', too often failing to stretch the most able. Reference is also made to the importance of developing the broader behaviours and attitudes that students need to get on in life (Lee-Porter, 2012). An earlier report in the Telegraph (Paton, 2011) referred to schools being turned into exam factories with the system robbing a generation of children of key skills, leaving many struggling at university and in the workplace. It would appear

that this scenario is mirrored in the responses of the Year 11 students and is an area in need of essential change.

Reflecting on the students' conceptualization of challenge, learning needs to be stimulating. This means encouraging curiosity, problem-solving, providing new situations to push boundaries and encouraging them to think for themselves and with others. Ultimately they need to move out of their comfort zone and in doing so develop qualities such as open-mindedness, perseverance, respect for others (Fisher, 2008).

4.3 Findings from Action Research Layer 1: The concept of challenge in subject settings

It was important for the students to be comfortable with the term 'challenge' – I therefore discussed examples of challenging activities and engaged them in a dialogue to elicit their views.

The next stage focused on students' perceptions of challenging activities which were explored via a written questionnaire. I visited each of the four groups of students (Year 7 Maths, Year 9 English, Year 10 Geography and Year 11 Science) to discuss the concept of 'challenge'.

The first question (Figure 4.2) set out to establish the level of challenge the students experienced in their current lesson i.e. the lesson in which the questionnaire was completed. All students in the sample (100) agreed that they were challenged with no students citing 'very little challenge'. The tendency for 'average' challenge proved more dominant in Years 7 and 11. However based purely on numbers, 51% of students claimed 'average' challenge compared to 49% of students who felt 'a lot' of challenge. This could reflect different notions of their understanding of 'challenge'. Surprisingly, only 25% of the Year 7 Maths group claimed to be challenged 'a lot' in their lesson, compared to 78% of the Year 9 English group, 67% of the Year 10 Geography group and 37% of the Year 11 Science group. This could be explained by the nature of the lessons, and in particular the variety and opportunities provided by the teacher for students to 'think outside the box'. Were students afforded more creative learning opportunities in English and Geography as compared to Maths and Science? Could it be the extended nature of task design in English and Geography which students perceived as more challenging?

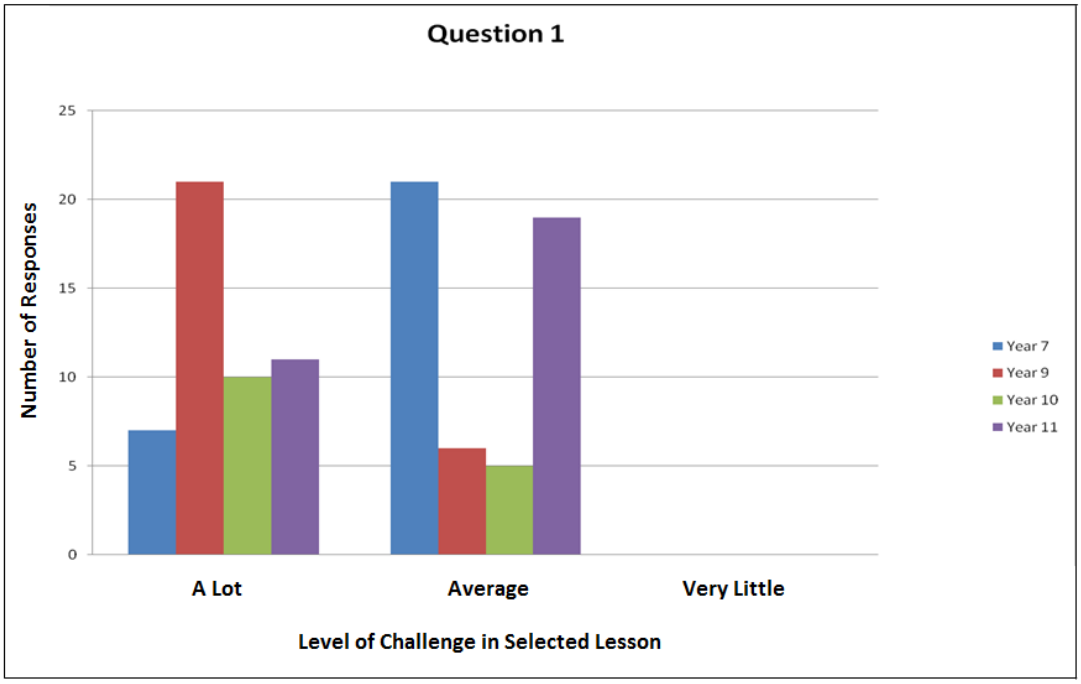

Figure 4.2 Question 1: The amount of 'challenge' I receive in this lesson is . . .

The second question (Figure 4.3) looked at the challenge students perceived across all of their lessons during the week, and highlighted a shift in perceptions of challenge when accounting for the full breadth of their curriculum. There was a clear shift in emphasis on the amount of challenge with 33% of students claiming 'a lot' of challenge compared to 66% of students citing challenge as 'average'. Only one student (Year 11) referred to 'very little' challenge. In contrast to the reduced level of challenge in their Maths lessons as recorded in the first question, 71% of the Year 7 group cited 'a lot of challenge' in all of their lessons (figure 4.3) compared to 29% in Year 9, 7% in Year 10 (7%) and 13% Year 11.

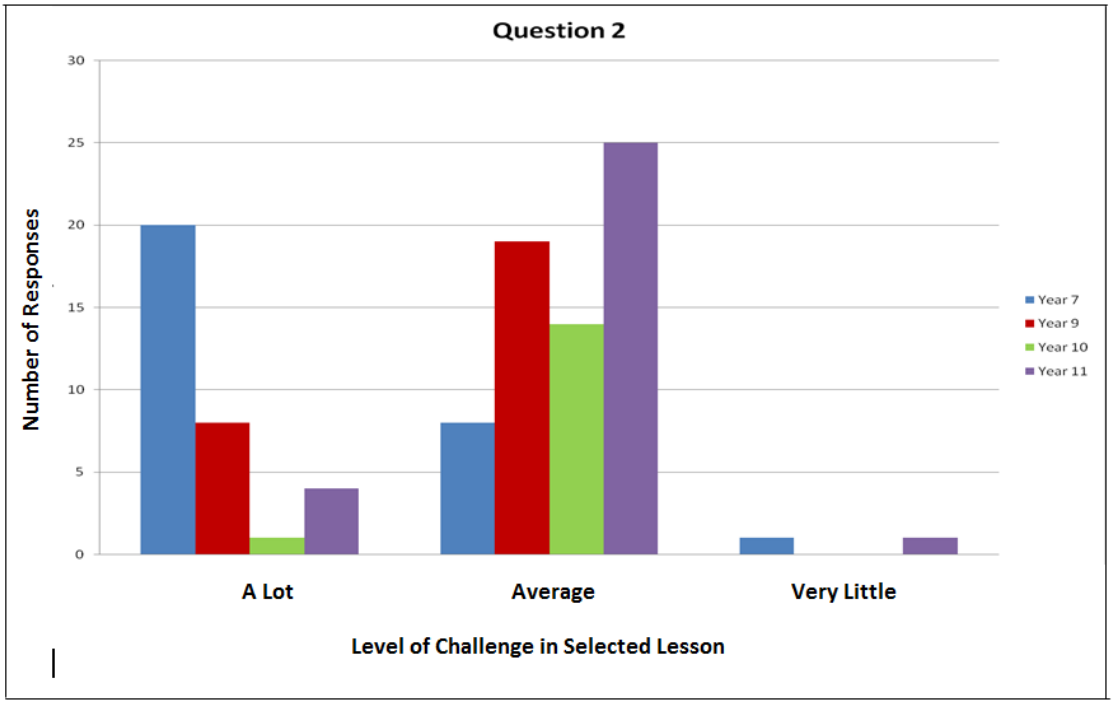

Figure 4.3 Question 2: Overall the 'challenge' in all of my lessons during the week is …

The higher percentage of perceived challenge in Year 7, could be associated with the recent transfer from primary school. The change in the curriculum and the structure of their timetable, in conjunction with exposure to a larger number of teachers and wider range of subjects could contribute to the higher response rate. This accords with research by NFER (2006, p.59):

> In some schools pupils felt that the range of work was so much broader than in primary school which meant that they had to work much harder. In particular they referred to starting new subjects, such as modern foreign languages, as being particularly challenging.

Maths, French and Science are listed as the subjects providing most challenge (Year 7 students) which appears to contradict the earlier findings in question 1 where only 25% of the students indicated that they were challenged by their Maths lessons. This could be the result of the Maths department striving to ensure all students from the large number of primary feeder schools have a consistent basic grasp of the knowledge and skills required. The declining perception of challenge in Years 9, 10 and 11 could reflect the change in focus as they move from Key Stage 3 to 4. At the Academy, students commence Key Stage 4 in Year 9. At this point they have selected their GCSE options and therefore begin a programme of study leading to their final examinations. This is

intensive and involves a large proportion of coursework and controlled assessments. Therefore the perceived reduction in challenge for students at Key Stage 4, is not surprising due to the intense nature of provision to support preparation for coursework and external examinations. It could be argued that the focus on examination technique reduces the opportunity for creativity, hence limited evidence of challenge as perceived by the students.

The findings from the questionnaires add to the developing picture of the research, with exam practice and revision exercises dominating the responses. In an era when teachers are constantly held under the spotlight to deliver positive subject residuals there is often a tendency to teach to the syllabus for fear of not meeting targets. This confirms a discussion held with staff (Appendix 1: Reflective Journal - Entry 1) when I became aware that their views were constrained because in their opinion, working the students harder with intensive exam revision, to push targets, constituted challenge. Often, note-taking, closed questioning and textbook data response tasks will form the structure of lessons. This concurs with Ofsted's view (2013, p.5) of some of the Academy's lessons:

> Where teaching had not reached a consistently good or outstanding level, teachers:
>
> - dominate the learning conversations
> - do not give students time to engage in the activities set
> - ask questions that demand a single right answer and require little or no creative thinking
> - fail to provide suitably challenging activities for the most able"

The third question, 'I am most challenged when…' reflected the outcomes of the brainstorm exercises. I analysed the comments for each group and collated the common themes (Table 4.2). A similar picture emerged to that presented by the brainstorm analysis (Table 4.1). Once again much of the terminology used by students had associations with preparing for external examinations (highlighted in blue). However, many of the comments point towards the nature of task design, that is learning new information, being pushed and having harder work (highlighted in yellow). There is also a clear indication that 'questioning' can provide 'challenge' (highlighted in green).

Year 7 made reference to individual subjects, for example, French, Geography, Maths, Science and Drama. Again, this is indicative of their move from a curriculum which

combines subjects at Key Stage 2 to Key Stage 3 where subjects stand independently on the timetable.

YEAR 7	**YEAR 9**
I have to learn new words in a different language. I do a test/assessment In French when you have to read out loud/do speaking assessments/remember words In drama when performing Geography Maths – Algebra/Assessments In Science: lots to remember/long words/practicals/homework When put on the spot to answer a question. I am asked to research things I have to present something I am set difficult questions I have a lot to do in a certain amount of time I am given homework on subjects that I am not as good at as others. I am put on the spot and I don't know the answer. To perform in front of everyone. I'm learning new things. Answer questions in a short amount of time.	Being asked complex questions about a topic I am doing something that is new which pushes me to the limit. I am doing examinations/coursework/revision My teacher asks challenging questions When we do drama tasks. Snowboarding or playing a guitar because I have to better myself. Answering questions I don't know the answer to. Doing coursework. I do things that I am not strong in. I do something I haven't done before. Doing timed tasks. We recap by doing assessments/tests Difficult questions that require me to think. Peer Assessments I need to write neatly. Using a new skill that I have learnt recently Essays.
YEAR 10	**YEAR 11**
I am set a difficult task to do. I have to do something new and investigate it I am learning something completely new that may be A Level but we get taught it in GCSE. I am doing something I have never done before. I learn new things that I don't fully understand. I am given new things to try out and when it is competitive. Tests I am given harder work to complete with more detail needed to answer it. I get asked to explain something complicated to the teacher or to other students. I can excel myself and my teachers motivate me. When I go through past exam questions Asked questions about everything in the topic and when given assessments. Exam questions/assessed questions.	Beginning a new topic or subject I am asked a question and think on the spot I am learning new things Working on my own to complete a task I work in groups of individuals I don't know. I have to meet a deadline/timed task (pressure). I do fun things in lesson but it's useful too e.g. Rounding up the lesson with a quiz. Making up my own ideas/views, evaluating my work. I have a time limit to do things I am told to research a subject/topic I am encouraged with interesting work so I will be more happy doing my best. Tests/Assessments Presented with a task I am not familiar with. I am around others of the exact ability and have questions aimed at my ability or higher. Having to do independent work without notes. I have been set difficult tasks which I have to work harder to achieve. Revision and exams.
Key: **Task Design** **Exam focused learning** **Questioning**	

Table 4.2 Question 3: I am most challenged when …

While the Year 9 group highlighted tests, revision, examinations and coursework as the areas providing most challenge – a shift once again towards the 'exam factory culture', there were other elements arising. Challenging and complex questions including

learning new things emerged. There was a similar pattern in Year 10 with students referring to learning new, more difficult and different things. The importance of motivation from their teachers and the opportunity to explain to other students added to the level of challenge. This accords well with research by NACE (2007, p.11) which outlines the effectiveness of teachers and students engaging in constructive educational dialogue and communicating frequently about academic tasks, motivation, projects, challenges and work styles. There were still indicators pointing to the emphasis on preparation for examinations, a thread which has appeared throughout the findings for Years 9, 10 and 11 (see blue highlighted statements in Figure 4.2). References to Independent work and keeping to deadlines provided the greatest challenge to the Year 11 students which would correlate with the activities engaged in as they prepare for external examinations. Again, the Year 11 perceptions of challenge mirror their brainstorm contribution emphasizing the intensity of external examination preparation.

A tick list of twenty 'challenging activities' formulated the fourth question (Table 4.3) providing students with the opportunity to tick as many or as few as they felt necessary.

Activity	Year 7	Year 9	Year 10	Year 11
Starters	**5**	**1**	**1**	**1**
Group Work	3	21	7	8
Exam Practice/Revision	**23**	**25**	**14**	**24**
Ref to Target Grades	9	12	7	5
Use of Games	**0**	**13**	**3**	**5**
Quest Techniques	15	13	7	16
Rewards	**0**	**14**	**4**	**3**
Interactive Whiteboards	1	11	2	3
Extension Work	**17**	**15**	**7**	**13**
ILTs (Homework)	21	18	7	17
Using ICT	**1**	**8**	**3**	**7**
Positive Comments	2	9	2	2
Traffic Lights	**1**	**8**	**1**	**1**
Timed Tasks	26	25	12	23
Research Tasks	**15**	**11**	**4**	**17**
Plenaries	3	7	1	11
More Difficult Work	**26**	**18**	**14**	**18**
Practical Tasks	9	16	5	7
Drama /Movement	**16**	**14**	**5**	**14**
Teachers Written Comments	5	17	4	6

Table 4.3 Question 4: Please tick all of the activities which you believe provide you with the most challenge in your lessons

The top three activities across the four year groups deemed to provide the greatest challenge were exam practice/revision exercises (86% of students), timed tasks (86% of students) and 'more difficult work' (76% of students). The responses indicating exam practice/revision exercises as providing the greatest challenge are representative of all year groups (Year 7: 79%; Year 9: 93%; Year 10: 93%; Year 11: 80%) – although this aspect was not considered to be challenging for the younger students based on the outcomes of the earlier brainstorm and the first three survey questions, when categorizing from a list of options it was deemed to be important. As the students were presented with a prepared list to select from this could have prompted their choices in the direction of what they deemed to be 'hard' rather than 'challenging'. The Independent Learning Task category interestingly provided the fourth highest response (63% of students) in respect of challenging lesson activities; however within that group the Year 10 students represented a lower 47% of responses (Year 7: 75%; Year 9: 72%; Year 11: 57%). This dissatisfaction with Independent Learning Tasks potentially links back to their perceptions of challenge highlighted in the brainstorm, for example, getting out of their comfort zone and risk taking. Were Independent Learning Tasks too simple in design and content to provide adequate challenge to students? I became fascinated by this finding and consequently curious to get to the root of the issue.

The activity with the lowest response from all year groups (8%) to providing challenge in lessons was 'starters'. This outcome could be the result of an 'over emphasis' by staff in their approach to 'starters' making the strategy too formalized rather than a natural introduction to the learning at the start of each lesson. This finding links back to my own perceptions from the regular learning walks undertaken before and during the research (Appendix 1: Reflective Journal - Entry 15).

On reflection, this proved to be a poorly worded question – I should have asked students to select just one of the twenty options. The question resulted in unnecessary time being spent analyzing a large number of responses.

The final question asked for three other things that would 'challenge' them in lessons. The overarching messages were again variable across the four year groups. Year 7 students included project work, poster design and learning a language. Presentations, coursework and learning objectives were the most popular choice for the Year 9 students

while the Year 10 group suggested peer assessments/reviews and surprise assessments/questions would provide challenge. Revision techniques and collaborative learning were the main choices cited by the Year 11 group. These themes were similar to those emerging in the preceding questions and the earlier brainstorm activity – as the students' progress through the Academy the emphasis on preparing for examinations accelerates and would appear to be dominant. The emergence of questioning and peer activities suggest both of these appeal to the students as a form of challenge

At the time I became interested in the differences when comparing the questionnaire responses and the brainstorm activity. This dissonance could have occurred due to the conditions in which both research tools were used. The questionnaires were completed independently; however, the brainstorm activity encouraged collaboration and the opportunity for similar views to be expressed. Much of the feedback emphasized a desire by students to be 'challenged' and 'pushed hard'. There is some overlap here with data from the questionnaires in relation to needing more challenge/push by their teachers. However there is also an element of hesitation from the students themselves who can often be reticent about asking questions and pushing the boundaries. In a number of the lessons observed students were passive and reluctant to challenge or question the work in progress – evidently the students want to do this and need to be encouraged and reassured that it is acceptable to 'challenge their teachers'. For 'challenge' to be effective there clearly has to be a two-way process and it is very clear that students are hesitant to challenge staff. This potentially stems from the relationships developed between staff and students. If students perceive their teachers are willing to take risks and give them greater freedom and control over their learning they will become more confident in their engagement.

Drawing on the analysis, the lack of challenge cited by students, for example, in the repetitive use of starter activities mirrors the practice observed during Learning Walks (Appendix 1: Reflective Journal Entry - 15). Students had the opportunity to question points being put forward but instead have remained silent and frustrated. From a staff perspective is there potentially a 'fear of failure' if challenge does not return the desired academic results? This is an aspect I have frequently reassured staff about, encouraging them to take risks with the understanding that there will be times when the 'risk' does not work. Ultimately failure is part of the learning process and is critical to the

reflection and reflexivity staff engage in when evaluating the success of teaching and learning.

4.4 Findings from Action Research Layer 1: focus group sessions

Following the questionnaire sessions with the four classes, a small group of six students with an equal number of boys and girls was extracted from each to facilitate the audio recorded focus group discussions (this activity took place before the questionnaire results had been analysed). I had not anticipated the time consuming nature of the transcription task. I scanned the transcription notes immersing myself in the data and using pattern codes to identify emerging themes, for example, some of the recurring phrases included, 'creativity', 'exam questions', 'homework', and 'thinking outside the box'.

The use of pattern codes served two main functions in this study. First, it reduced large amounts of data into a smaller number of analytic units. Second, it helped to build a cognitive map, an evolving schema for understanding what was happening (Rowlands, 2005). Some of the categories emerging were similar and therefore suitable for forming into a larger group but care had to be taken not to develop the new category into something too big and unwieldy. The examination of the categories themselves was an activity of continuous refinement. Early categories were adapted, merged, subdivided or simply omitted (Wellington, 2003).

Students in Year 7 cited Maths, Modern Languages, Science and Drama as the lessons providing the most challenge. The reference to Maths does not correlate with the findings of the questionnaire which could indicate that the students selected for the focus group had represented the proportion citing their current lesson i.e. Maths as providing challenge. Alternatively students may have mirrored the views of their peers rather than being a single voice expressing concern in Maths. They also referred to the challenge provided by practical lessons and timed activities. An interesting comment from one student *'we have had to try different ways of doing things and that is challenging because we haven't done it that way before'*, confirms feedback staff have received from students via the lesson review process. This also corroborates my experience of visiting classrooms and seeking students' views on the most enjoyable aspects of their lessons.

Students appreciate breaking new ground and relish the challenge associated with this. A further comment confirmed the sometimes mundane approach to the setting of ILTs (homework*) 'In Maths the homework we get is usually just to do sums – we could do more research to do with the Maths and finding out things that have happened with Maths*. The Year 7 students also discussed extra-curricular activities and teambuilding exercises which they felt would add more challenge to their experience of Academy life.

Questioning appeared as the most frequently occurring category in the Year 9 focus group discussion, for example, *'They ask us questions throughout the lesson to keep us on task with what we are doing and make us think about how we could make our work better.'* Timed tasks, marking of work and early exam entry also featured as recurring groups. The subjects classified as providing most challenge were Maths, English, Science, Business Studies and History with the key references to challenge referred to as examination practice, coursework and essay writing. The level of difficulty perceived in a subject can easily be linked by the students to challenge, for example Maths is regularly cited as a more difficult area of study.

The Year 10 students (Appendix 8) made reference to a number of areas relating to challenge including assessment, targets, extension activities, 'thinking outside the box', the internet, visits, use of the media and homework (ILTs). Reference was made to the use of newspapers in English lessons and qualified by *'but we don't use them in any other lessons*.' Two further comments relating to the use of newspapers suggest a desire to have greater access to these resources. *'If we are asked to collect information from newspapers we end up reading the article to see if it is relevant'* and *'there is a lot of stuff in the newspapers that relate to Geography e.g. disasters so we should be encouraged to read the news more.'* Comments relating to 'watching the news' were also made.

The Year 11 focus group (Appendix 10) highlighted Maths, English and Business Studies as the subjects providing the most challenge. Within these subjects the timed assessments and exam practice provided pace and interest as did the use of the Interactive Whiteboards. Peer Assessment also featured as an example of a strategy which required them to think about strengths and weaknesses not only in their peers' work but also their own. The use of practicals in Science lessons was also an indicator of challenge along with preparing their own revision questions. The comment relating to

Business Studies lessons about preparing part of the lesson and delivering it to other students is interesting *'When you are taught by your peers you can relate to it better – we think we understand better than the teacher talking to us or at us.'* Again, reference was made to the need for more extra-curricular activities to provide challenge outside the classroom.

The changing perceptions students have of challenge from Year 7 through to Year 11 are evident from the research. In Year 7, the students' views of challenge are closely linked to their experiences of exploring new ideas and this fits with the more creative approach taken to the curriculum by their teachers. This is a direct consequence of not being tied to examination targets and having greater freedom to try a variety of approaches in their classrooms. As the students progress to Year 9 and the start of their Key Stage 4 curriculum, challenge is interpreted as examination preparation and this thread continues to an extent through into Year 11. I found some diversion from this trend in the Year 10 discussion. Although reference was made to examination targets and assessment, students placed greater emphasis on the deeper aspect of challenge e.g. thinking outside the box. This was also the case in the Year 11 focus group session. My own steering of the discussion was in part the reason for this shift in what constituted challenge. The experience from the Year 9 discussion prompted a stronger steer to direct the questioning and subsequent debate.

4.5 Findings from Action Research Layer 1: teachers' perceptions

Additional evidence from lesson plans (Appendix 9) and lesson observations of the four groups supported the process of triangulation, although the data collection was less explicit the level of analysis therefore more tentative. The lesson observation classroom facilitated an unobtrusive opportunity to record and study the level of challenge alongside another colleague. During a meeting of the Learning Community on 22nd January 2010, staff articulated an emerging understanding of challenge evolved (Appendix 1: Reflective Journal – Entry 1):

- Questioning.
- Problem solving and decision making.
- Ability to challenge staff and question the content of the lesson – relationships need to be fostered for this to happen.
- Application of subject knowledge into 'new' and 'real' situations.

- Understanding how ‘what’ they are learning will help them in the ‘real’ world.
- Competitions, group work and games.
- Giving students the power to investigate.
- Pushing students beyond the boundaries.
- Thinking outside the box.
- Students having ownership of learning – preparing parts of the lesson.
- Group target setting strategies to enable students to support one another.
- AFL including peer assessment.

The group were in agreement with the majority of strategies put forward with the exception of *‘Students having ownership of learning – preparing parts of the lesson.’* 50% of the group identified risks associated with this level of freedom – this surprised me as I had personally used this strategy and found it to be an excellent tool for providing challenge. Following a robust discussion the list was agreed and when compared to the students’ perceptions there were clear areas of overlap. For example, questioning, applying their knowledge to real situations and thinking outside the box. The key difference highlighted was the students’ regular references to examination preparation and assessments – this did not feature in the staff analysis of ‘challenge’. The reason for this is clear: staff know that they have to drive their classes to meet targets and this pressure is felt by students.

Teachers know the true meaning of challenge, yet external pressures often prevent them from releasing their true talent in the classroom because they have become obsessed with improving test statistics, as if results do not rise, fearful consequences can await them (Mansell, 2007). The staff had found it difficult to articulate their understanding of challenge with relatively basic concepts emerging, notably the absence of cognitive development which paved the way for further exploration.

Within a short period of time (by the end of the week of the observation) we were able to moderate our views and share the findings of the observation with the member of staff teaching each of the groups and refer back to the lesson plan. The aspect which provided the basis for most discussion centred on assessment for learning, and in particular the nature of questioning. As co-observers we were able to easily review the questioning and during playback of the lesson unpick the types of question used. When debriefing the lessons with the class teachers they had not realized the closed nature of many of their questions and therefore the limited challenge available to students.

The four lessons observed all provided good opportunities for challenging activities and I was keen to find evidence of cognitive challenge. The starter tasks set the pace for the remainder of each lesson with effective timing and higher order questioning emerging within the group activities, that is, between students. Social constructivism therefore played a key role in the success of the questioning techniques observed in the lessons. In the Year 10 Geography lesson, the teacher referred the students to the 5Ws: *Who, What, Why, Where and When* encouraging peer discussion to compare answers to one of the tasks and discuss the outcomes. Students explored questions in depth stimulating higher order peer questioning and debate, The facilities within the observation classroom allowed for the camera to provide close up recordings of individual groups thereby giving us the opportunity to listen to each of the groups engaging in the peer discussion activity involving the 5Ws. Dialogue became the vehicle by which students' ideas were considered, shared and developed (Pritchard, 2009). In lessons observed, the teachers were stimulating dialogue and supporting the development of understanding through 'scaffolding', linking well to Vygotsky's notion of a zone of proximal development (ZPD).

Peer assessment using higher order questioning and plenaries featured as a strength across all of the lessons. Where appropriate the use of examination questions provided additional challenge to the Key Stage 4 students. The setting of Independent Learning Tasks, although consistently applied in all of the lessons observed, using a variety of approaches, did not seem to be a driver for challenging the students. Four lessons which had provided high levels of challenge through carefully crafted activities had not put the wheels in motion to extend the challenge with the Independent Learning Tasks (homework) which had been set. As identified in a DfES report (2000, p.8) "able students will thrive on problems that are challenging, however a teacher who spoon-feeds information to an able child is short-circuiting the opportunity to develop thinking". It is therefore essential that Independent Learning Tasks, which are set to extend learning at home, provide the 'push' for increased challenge and motivation.

4.6 Summary of the Findings from Action Research Layer 1

The triangulated results (Figure 4.4) confirmed a lack of challenge present in Independent Learning Tasks (ILTs), with Year 10 students in the minority position when compared to the other year groups in the sample, and confirms an Academy wide

concern with the change in attitude of Year 10 students to these tasks. Why then did I select ILTs as an area for further exploration when statistically the difference between Year 10 and 11 represented only 10%? In the observed lessons the Independent Learning Tasks for completion at home did not match the challenge evidenced in the classroom peer and group activities. I therefore decided to probe further how this issue could be more successfully developed, to provide increased 'stretch' in independent learning (homework) tasks designed to build upon the challenge experienced in the classroom environment.

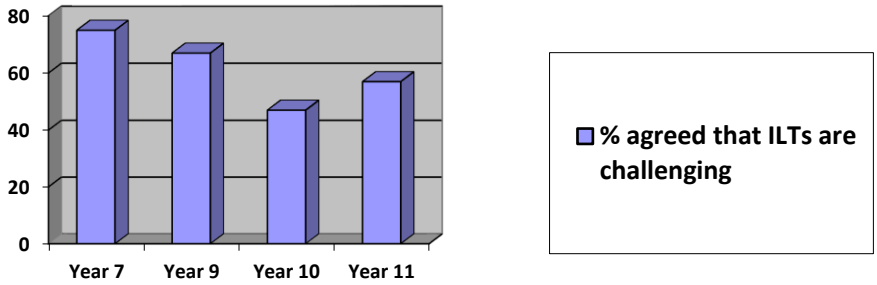

Figure 4.4 Comparison by Year Group of the level of Challenge perceived in ILTs

It was also interesting to note the changing perceptions of challenge as students moved through the year groups. The fixation with examination performance is evident from the examples of challenge cited by students from Year 9 onwards. I was therefore keen to explore not just how redesigned Independent Learning Tasks, but task design across all subjects, could provide increased challenge without removing the depth and breadth required by individual courses. In reviewing task design, effective integration of thinking skills and questioning techniques would also be considered. The Year 10 Geography group would afford the opportunity to begin this investigation.

4.7 Findings from Action Research Layer 2

Through an ongoing process of reflection I moved my focus to the lack of challenge perceived in ILTs as identified in the results from the Year 10 Geography group and further strengthened by the students own desire to learn new and different things (Table 4.1 and Figure 4.1). I planned to explore the students' understanding of the notion of 'challenging thinking' in respect of their ILTs, looking also at questioning techniques.

Could the students' perceived lack of challenge in their ILTs be linked to the level of thinking skills inherent in the tasks? During the focus group interviews students voiced their desire to be given the opportunity to 'think for themselves'. One student referred to how 'it would be a challenge in itself to apply your own knowledge and teach people that are younger than you'. Another comment by a student suggested that 'English is more challenging when we get a new poem – just looking at it and analyzing it to come up with your own thoughts – I find that quite challenging' (see Appendix 10). These findings resonated with a presentation I attended by a National Strategies team member who included reference to the importance of 'thinking skills' (Appendix 1: Reflective Journal – Entry 43). McGregor's (2010) 'Thoughtrack' provided the basis for developing a 'Thinking Skills Bubble' diagram referred to in Chapter 3 (Figure 3.5) to firstly establish the students' interpretation of the terminology applied to higher order thinking skills. If learning is making sense of experience, and thinking is how we learn, then improving students' thinking skills will help them to focus on 'knowing how' rather than 'knowing that' (DfES, 2000). Although students are constantly engaged in thinking this task proved difficult in the classroom environment due to a lack of comprehension of some of the key words used e.g. synthesis. In the earlier brainstorms completed by the groups I had not been able to detect from the data the students' own reference to thinking skills and therefore this task was introduced. The students expressed a concern about their failure to complete the task - they wanted to impress their Principal but felt they would be 'letting me down'. The students' discomfort and concern about the task put a negative slant on the research process. The 'thinking skills bubble' had not proved itself to be the right 'tool' to scaffold students' self-analysis. The class teacher confirmed the students' reactions to the process stressing the need for more information to assist their understanding. Would the process have been simpler if I had been present during the task to provide an explanation for this element of the research? Would my presence have provided the reassurance needed by the students? The barrier between students and their 'Principal' could have been removed had I taken a collaborative approach to the exercise. I should have worked alongside the students explaining each of the 'thinking skills' used in the diagram and modelling with appropriate examples which they could easily associate with and link to their existing work. This unexpected outcome from the task led to a review and period of reflection on the approach taken to the research leading to the emergence of a new layer.

4.8 Findings from Action Research Layer 3

The third layer of action research focused on task design and began with the development of a 'Student Friendly Thinking Skills Bubble, detailed in Chapter 3 (Figure 3.7). Each 'thinking skill' identified was expanded to include an explanation to support the students' understanding of the term. A two stage process then followed engaging the students in a standard ILT task (Data response exercise from Geography work pack). Upon completion of the task they were asked to indicate on the bubble, the 'thinking skills' used. This process highlighted the importance of using appropriate language with clear explanations, therefore enabling the students to progress through the exercise with confidence. The following week a new, more challenging ILT task was completed and the student friendly 'thinking skills bubble' was repeated.

The extract from the analysis of both 'thinking skills' bubbles shows the skills most apparent in the second more complex ILT in relation to gaining new knowledge (Table 4.4) are 'define' and 'show' (both indicating a 36% increase). This can be explained by the lack of clarity of the skill of 'define' and 'show' in the first task which became more evident as a skill in the second ILT. It is also interesting to note that 11 responses from students asked for the addition of 'justify', 'annotate' and 'imagination' to the list of thinking skills offered. The 'recognise' skill perceived in gaining new knowledge fell by 50% in the second ILT paving the way for the more complex skills and the students rightly identified their own, that is, 'justify, annotate and imagination'.

THINKING SKILL HEADING	THINKING SKILL INDENTIFIED	ILT 1 Number of Student Responses	ILT 1 % of Student Responses	ILT 2 % of Student Responses	ILT 2 Number of Student Responses	% difference between ILT 1/ILT2
How have I gained new knowledge?						
	Define	0	0	5	36	+36
	Recognise	12	86	5	36	-50
	Recall	1	7	1	7	0
	Identify	11	79	9	64	+15
	Label	14	100	13	93	-7
	Examine	3	21	3	21	0
	Show	6	43	11	79	+36
	Collect	0	0	2	14	+14
	Justify (ss)	0	0	1	7	+7
	Annotate (ss)	7	50	9	64	+14
	Imagination (ss)	0	0	1	7	+7

Table 4.4 Comparison of 'thinking skills' identified by students in ILT 1 and ILT 2 in relation to 'gaining new knowledge'. (Extracted from Analysis of Thinking Skills Task)

The skills related to comprehension highlighted a 65% increase in the use of 'summarising' in the second ILT task while the construction of new ideas from information resulted in a 36% increase (Table 4.5). It could be argued that this analysis is restricted by its positivist overtones since the students were engaged independently in completing the thinking skills bubble and their interpretations at the time may have taken a different route had the task been interpretivist in design, for example, a group discussion task. The 'translate' skills did not have a presence in either of the tasks and 'interpretation' remained at the same level of challenge in both tasks. The skills of 'explaining', 'describing' and 'justifying' differed by at least 20% in the second ILT. Once again the students added four additional thinking skills to the task: 'depict', 'justify', 'design' and 'experiment'.

When considering both ILTs in relation to applying their understanding to 'real situations' (Table 4.6) the students' responses indicated a sharp increase in the skills of solving (58%), experimenting (50%) and predicting (43%). The 'display' skill revealed only a minor shift of 8% due to the similarity of one of the questions to be completed and again students added two further skills to the task: 'map skills' and 'present'.

THINKING SKILL HEADING	THINKING SKILL INDENTIFIED	ILT 1 Number of Student Responses	ILT 1 % of Student Responses	ILT 2 % of Student Responses	ILT 2 Number of Student Responses	% difference between ILT 1/ILT2
Have I comprehended the task?						
	Translate	0	0	0	0	0
	Interpret	4	28	4	28	0
	Construct new ideas from information	7	50	12	86	+36
	Explain	9	64	13	93	+29
	Describe	7	50	10	71	+21
	Summarise	2	14	11	79	+65
	Depict (ss)	1	7	0	0	-7
	Justify (ss)	0	0	4	28	+28
	Design (ss)	0	0	1	7	+7
	Experiment (ss)	0	0	1	7	+7

Table 4.5 Comparison of 'thinking skills' identified by students in ILT 1 and ILT 2 in relation to 'Comprehension of the task'. (Extracted from Analysis of Thinking Skills Task)

THINKING SKILL HEADING	THINKING SKILL INDENTIFIED	ILT 1 Number of Student Responses	ILT 1 % of Student Responses	ILT 2 % of Student Responses	ILT 2 Number of Student Responses	% difference between ILT 1/ILT2
Have I applied what I have understood to a real situation?						
	Solve	0	0	8	57	+57
	Experiment	2	14	9	64	+50
	Display	10	71	11	79	+8
	Predict	0	0	6	43	+43
	Map skills (ss)	1	7	0	0	-7
	Present (ss)	0	0	2	14	+14

Table 4.6 Comparison of 'thinking skills' identified by students in ILT 1 and ILT 2 in relation to 'Applying what I have understood to a real situation'. (Extracted from Analysis of Thinking Skills Task)

In relation to analysis (Table 4.7), the skill of 'organisation' (28% increase) showed the largest positive variance. The skills of 'differentiate', 'infer' and 'justify' were only perceived to be present in the second ILT and the responses to the two student suggested skills 'compile' and 'justify' raise questions about the students' potential understanding of the terms since the need to 'justify' was a key component of the second ILT whereas the need to 'compile' had no particular significance to the task.

THINKING SKILL HEADING	THINKING SKILL INDENTIFIED	ILT 1 Number of Student Responses	ILT 1 % of Student Responses	ILT 2 % of Student Responses	ILT 2 Number of Student Responses	% difference between ILT 1/ILT2
Have I analysed the information?						
	Arrange	6	43	3	21	-22
	Differentiate	0	0	2	14	+14
	Group	7	50	1	7	-43
	Organise	6	43	10	71	+28
	Categorise	10	71	3	21	-50
	Compare	6	43	8	57	+14
	Infer	0	0	2	14	+14
	Distinguish	5	36	6	43	+7
	Compile (ss)	1	7	0	0	-7
	Justify (ss)	0	0	2	14	+14

Table 4.7 Comparison of 'thinking skills' identified by students in ILT 1 and ILT 2 in relation to 'Have I analysed the information'. (Extracted from Analysis of Thinking Skills Task)

The ability to 'synthesize' (Table 4.8) highlighted the sharpest increase in the skill levels between ILT 1 and ILT 2 in relation to planning (86%), proposing (57%) and designing (50%). These statistics add weight to the discussions with students who clearly

articulated their enjoyment in 'planning', 'designing' and putting forward their proposals for change. In the transcription of the focus group interview (Appendix 13) which followed the completion of the ILTs students 1, 2 and 3 made the following comments which also substantiate the statistics:

Student 1: *'I think I was required to think outside the box and construct a new idea and weigh up the consequences and the impact.'*
Student 2: *'It challenged my imagination.'*
Student 3: *'We had to adapt each other's ideas and then develop our own after three people had already added to it.'*

The ability to 'hypothesize' appeared to be more restricted in the task and could have been addressed with an optional extension activity which would have added to the level of challenge provided for the students. One of the students added the skill 'justify' and in discussion with her, she had enjoyed having to justify her reasons for change to a fellow student who did not fully agree with her proposal.

THINKING SKILL HEADING	THINKING SKILL INDENTIFIED	ILT 1 Number of Student Responses	ILT 1 % of Student Responses	ILT 2 % of Student Responses	ILT 2 Number of Student Responses	% difference between ILT 1/ILT2
Have I been able to synthesize?						
	Produce	9	64	12	86	+22
	Propose	0	0	8	57	+57
	Design	7	50	14	100	+50
	Plan	1	7	13	93	+86
	Formulate	0	0	4	28	+28
	Compose	3	21	4	28	+7
	Construct	7	50	11	79	+29
	Hypothesize	0	0	1	7	+7
	Justify (ss)	0	0	1	7	+7

Table 4.8 Comparison of 'thinking skills' identified by students in ILT 1 and ILT 2 in relation to 'Have I been able to synthesize?'. (Extracted from Analysis of Thinking Skills Task)

The 'evaluation' aspect (Table 4.9) highlighted the skills of 'suggesting' (65% increase) and 'deciding' (36% increase) as the key variants. The opportunity to 'judge' was deemed to be present in the second ILT and 'justify' appeared based on student recommendations. The empowerment of the students to make decisions led to a clear feeling of challenge and an aspect of the work welcomed by students.

THINKING SKILL HEADING	THINKING SKILL INDENTIFIED	ILT 1 Number of Student Responses	ILT 1 % of Student Responses	ILT 2 % of Student Responses	ILT 2 Number of Student Responses	% difference between ILT 1/ILT2
Have I evaluated?						
	Appraise	3	21	1	7	-14
	Judge	0	0	4	28	+28
	Criticise	7	50	4	28	-22
	Decide	8	57	13	93	+36
	Suggest	3	21	12	86	+65
	Justify (ss)	0	0	4	28	+28

Table 4.9 Comparison of 'thinking skills' identified by students in ILT 1 and ILT 2 in relation to 'Have I evaluated?' (Extracted from Analysis of Thinking Skills Task)

In addition to the areas identified in each of the bubbles the students added the following to the list of skills: justification, annotation, depiction, imagination, designing, experimentation, presentation, mapping, and compilation.

All of the thinking skills headings revealed a shift from ILT 1 to ILT 2 based on student perceptions of increased challenge, with the exception of 'analysis' (Table 4.7). This reflects the level of analysis present in the first ILT, particularly the 'grouping' and 'categorising' of information which the students identified as more challenging than in the second ILT. In addition, ILT 1 had been carried out at home which is the expectation for homework tasks. However, ILT 2 had been completed in the classroom environment in order to observe the students at work and also enable interaction. The biggest shift in challenge applied to 'synthesis' – the students' engagement in redeveloping their peers' ideas would have accounted for this. However, the figures represented in Table 4.10 are not particularly statistically significant.

Thinking Skill	Mean	Standard Deviation
Knowledge	6.5	22.1
Comprehension	18.6	20.7
Application	27.5	23.7
Analysis	-3.1	25.3
Synthesis	32.5	25.5
Evaluation	20.2	29.8

Table 4.10: Statistical Analysis of the change perceived in 'thinking skills' from ILT 1 to ILT 2

An enquiring environment had been created in the classroom with students openly discussing the questions relating to the task. Peer questioning proved to be challenging, encouraging curiosity and creative thinking. For example, there were regular references made to 'how the design could be improved' and 'why this kind of improvement would be made'. Students were providing reasons for their opinions, drawing inferences, making deductions and justifying their beliefs. Creative thinking skills were present with students constantly looking for alternatives in their explanations and outcomes. They had confidence in their personal judgements, and were able to form their own points of view.

The next stage in the research process involved the students responding to two questions:

1 Was ILT 2 more challenging than ILT 1? Explain why.
2 How could the task be made even more challenging?

The responses unanimously (100%) asserted that the second Independent Learning Task provided more challenge than Independent Learning Task 1 and the most frequently occurring reasons given included creativity, reduced time to complete the task and thinking differently/outside the box.

Peer interaction became an important factor in the increased challenge as identified in responses: 2; 7; 13; 15; 24; 26; 30 (Appendix 11). The twelve responses with references to 'we' further confirm the strength of peer engagement. This dialogue with other students supports their development as successful and independent learners.

In responding to Question 2 (Appendix 12) the students provided suggestions for increasing the level of challenge further by 'working in groups' (responses: 1; 4; 6; 20) and it was interesting to see a desire for a 'competitive' element to the task. Group work which promotes dialogue with others through 'learning conversations', provides a good mechanism for students to develop metacognitive strategies (DfES, 2000, p.6). There has been a growing acknowledgement that metacognition or self-awareness including a students' awareness of themselves as learners, leads to more effective learning.

Within a 24 hour period of completing the second ILT task I worked with a focus group of six students to gain further clarity about their understanding of the challenge experienced in both tasks. This session was audio recorded. Students had been given the opportunity

to develop higher order thinking skills in the redesigned task. The transcription confirmed that they had been given the opportunity to 'think outside the box' (Appendix 13: response 1) and the task had 'challenged their imagination' (Appendix 13: response 2). 'Imagination' occurred again in response 18. The benefits of group work also emerged referring to the generation of 'more ideas and creativity' (Appendix 13: response 10). The challenge of working on tasks pitched beyond the students' current level of attainment also surfaced (Appendix 13: responses 13/14).

Students voiced concerns about challenging the views of their peers, and their ideas being considered 'weird' (Appendix 13: responses 6 and 8). Despite this concern they still engaged proactively in the task exhibiting a cognitive developmental dialogue (justifying, explaining etc.), working with each other and accepting that it is normal to disagree and discuss contrasting ideas and associated reasoning (McGregor, 2010).

The students were unanimous in their view that ILTs across the Academy did not have sufficient 'challenge'. The two exceptions cited were Maths and Science due to the freedom exercised to research, use their imagination and work to deadlines. Project work spread over a period of weeks allowed creativity and was a preferred route for the students.

The outcomes from the questionnaires and the focus group interviews point to the important role teachers have in trying to understand the cognitive, emotional and social needs of able students in their classrooms. In attempting to profile the 'Gifted and Talented', Betts & Neihart's (1998) category of the Autonomous Learner is well matched to this group of students in the Academy. They feel secure designing their own educational and personal goals and are able to take risks. They realize they can create change in their own lives, and they do not wait for others to facilitate change for them. For example, in the Year 11 focus group session (Appendix 10) reference was made to 'getting your hands on practical Science and controlling your own actions' (Response 37). This is further supported by comments such as 'you want to have your own thoughts' (Response 39), 'we are encouraged to think outside the box' (Response 40) and 'it is easier to understand something when you have done it yourself' (Response 56). As autonomous learners, the students were also able to express their feelings, goals and needs freely and appropriately (CCEA, 2007). The autonomous trait was evident when

students engaged in the specifically designed tasks. The cognitive thinking and discourse which arose from this exercise gives merit to explore further how students will achieve at higher levels, when given an appropriate level of autonomy in their learning. The strength of peer interaction is also a critical element of challenge and one that students recognized as important to developing their enjoyment of learning. This is apparent from the views collated in Appendix 11:

> 'We engaged with other members of the class to discuss ideas and ask for help'. (Response 26)
> 'We expanded our knowledge and creativity'. (Response 29)
> 'We were free to do what we wanted without restriction'. (Response 32)

4.9 Summary of Findings from the 3 Action Research Layers

While stressing the need to ensure students are given autonomy in their learning there is still the view that teachers are concentrating on giving basic skills to more students, so average ability goes up, but they fail to stretch the brightest so the high-end ability fails. This results in students' responses becoming quicker, but they lack the ability to think anything but shallowly (Shayer, 2008). This would concur with the brainstorm activity and questionnaire results where there are frequent references to; tests, exams, revision and coursework (Figure 4.1 and Table 4.1). The Year 11 focus group session (Appendix 10) furthers strengthens this position.

The research has highlighted gaps in the level of challenge for able students in the Academy. However, there is also evidence to confirm that the tide is changing and the green shoots of progress are emerging. There is a willingness from teachers to redesign challenging tasks and a definite desire from students to embrace new ways of learning with a strong emphasis on peer interaction.

Chapter 5

ANALYSIS OF FINDINGS

5.1 Introduction

The study arose due to a growing concern about the achievement and attainment of able students in the Academy. This issue was evident from progress, assessment and examination data and further accentuated in the evidence gained from learning walks and lesson observations. What began as an investigation into the level of challenge experienced by able students in the Academy developed into a specific focus on task design, in particular, Independent Learning Tasks (homework). I also followed through emerging issues relating to thinking skills and questioning techniques. In this chapter I consider the inter-relationship of all aspects of the study. The research timeline (Appendix 2) documents the journey, from concerns arising about challenge in lessons for the most able students, to a review of associated literature. An action research methodology is then embraced, taking account of the emerging data and the implications for its use in improving practice for able students within the Academy.

Initially I had to grapple with a vast array of terms relating to the notion of 'able'. My first thoughts centred on the wealth of research surrounding 'able' or as more commonly referred to 'gifted and talented' students, and as I began to trawl through the information noted the range of terminology in use. This 'terminological dilemma' (Lambert, 2010, p.99) fuelled my decision to use 'able' as the preferred term. Definitions of 'challenge' also had to be explored and debated with the Learning Community and students.

5.2 Developing a community of research

In writing this thesis I have engaged in a journey of discovery, not only as a professional but also as a practitioner researcher. Starting the process as a novice action researcher I modelled risk taking and encouraged staff to get on board. I chose to work with the Learning Community (eight staff with a common interest in improving teaching and learning) and four groups of students (Year 7 Maths, Year 9 English, Year 10 Geography and Year 11 Science). By engaging in a participatory approach I gained the support of staff and students who exhibited a genuine interest in the research. As Principal, and lead teacher this provided me with the overview and the drive to work with the model I

was proposing to staff, and strengthened my position when sharing outcomes and planning future strategy. As an action researcher within a research community I have been able to develop "expertise through looking at situations closely and analyzing them, recognizing any possible bias and interpreting data, rather than looking to generalize findings" (Koshy, 2010, p.102). I have been fascinated by the manner in which the research changed direction and reassured by the interest displayed by both students and staff in the project. For the staff, the opportunity to work with the Principal on a matter close to their own daily practice proved a recipe for successful co-operation and collaboration.

A key strength of the research has been its focus on naturally occurring, ordinary events in natural settings, providing a strong handle on what real life is like in classrooms (Miles and Huberman, 1994). In my role, this "real life" understanding became critical to the process of improvement. By working 'on the ground' with teachers I was able to persuade and encourage a real sense of enthusiasm for the research, and work collaboratively to deal with any pre-conceptions which may have existed when the idea of the research was first presented.

I have been impressed by the impact of the research process on the growing community of learning within the Academy. My eyes have been opened to the capacity of teachers as agents of change. I began to see teachers in a different light. They were receptive to new ideas and very keen to share strategies that had proved effective in their classrooms. The Monday morning full staff briefings are now regularly used as a vehicle for sharing best practice, with staff ranging from recently qualified colleagues to more experienced staff, leading sessions. Any ideas which are electronically shared are then uploaded to the staff area as a resource for future reference and use in the classroom. Staff appreciate the growing resource bank and this has encouraged wider sharing of expertise and resources.

5.3 Review of the methodological approach

Reflecting back on the title of the thesis,

> "Reviewing the challenge for able students. A participatory enquiry exploring the nature of pedagogy that can enhance cognitive engagement with homework."

the original research questions were designed to explore this issue of challenge using an action research methodology:

1. What do able students perceive to be ‘effective challenging activities?’
2. What do teachers of able students perceive as ‘effective challenging activities?’
3. How far do the views of students and staff compare?
4. How do teachers effectively enact challenge in their classrooms where achievement is already high?

Question 4 was redesigned following the outcome of the first action research layer:

4. How do teachers effectively enact challenge in ILTs where achievement is already high?

Using these questions as the building blocks for my research, I have been able to establish students’ and teachers’ perceptions of ‘effective challenging activities’ while also exploring the similarities and differences in their views. The findings have broadened my own understanding of ‘challenge’ giving me insights into the students’ and teachers’ worlds.

On reflection, in designing certain elements of the study, my inexperience as a researcher led to missed opportunities. For example, I could have worked with the staff to develop the questions for the student questionnaire and in the analysis of the findings. This would have increased the level of collaboration giving staff greater ownership of the research. However, I felt that I needed to have particular questions answered and deemed therefore that my own construction of these provided the most appropriate platform from which to begin the research. I did seek their views on the questionnaire after its construction and built in feedback relating to the design. Increased engagement by staff in the early development of the questionnaire may have avoided the poor design of ‘question 4’ which gave students too many options from which to select challenging activities. A pilot questionnaire with a small sample of students before launching the research with the four groups would also have provided insights into the quality of the design. For example, question 5 proved ambiguous and a simple change of phrase would have helped understanding, that is, by using ‘must not’ rather than ‘do not have to be’.

The use of lesson observations afforded the opportunity to study selected groups, looking at some of the elements arising from the questionnaires, and jointly debating the

areas of challenge perceived. When observing staff my style was co-operative changing to a collaborative approach during our exchange of views about the teaching and learning observed in the classroom. Particularly interesting during the observations were the examples of questioning and problem solving which succeeded in pushing the boundaries for students, bringing social constructivism alive in the classrooms. This resonates with the view that the most effective interaction is one in which joint problem solving occurs, guided by an individual who is skilled in the use of these intellectual tools (McGregor, 2010). In the Science lesson, students were regularly asked to express their observations and to offer possible explanations for what they had noticed. "Such articulations enable sense-making and, at the same time, allow the teacher some insight into the students' construals so that subsequent teaching events can be appropriately structured" (Davis and Rimm, 2008, p.102).

The study flowed through three layers. Each layer comprised planning, acting and reflecting and could quite easily have developed into a continuing process of spirals on spirals (Figure 3.4). This experience served as a strong reminder about the messiness of action research (McNiff, 1988). I had assumed a simple set of steps would provide answers to questions, but instead I found myself constantly reflecting and thinking about different pathways through the complex issue of challenge.

The first action research layer opened the door to a novice researcher. I gained insights into the issue of challenge for able students. This shifted my thinking to the level of challenge present in ILTs, including the use of higher order thinking skills and questioning techniques. At this stage of the study, I moved forward as a solo researcher having completed the questionnaires and lesson observations in a co-operative and collaborative manner. As I continued to progress through the first layer, the most interesting and progressive aspect of the research arose from the use of the focus group interviews. The interviews had distinct advantages over the questionnaires in that they provided richer data due to the ability to probe further (McNiff and Whitehead, 2010).

The lack of challenge identified in the Year 10 ILTs from the first stage of the research, triggered a second layer of action designed to discover the students' understanding of the notion of 'challenging thinking' in respect of their ILTs. The framework used in this layer proved complex prompting the development of a third layer. I had made a poor

judgment in selecting a thinking skills tool which had been designed for another audience.

The final layer resulted in the design and implementation of a student friendly thinking skills bubble used to analyse two ILTs. The first task presented was typical for the group, the second one had been designed to specifically challenge the students.

By the end of the third layer the outcomes refocused my approach to consider the issue of 'thinking skills' within ILTs and the supporting questioning techniques. At this point I paused and pursued the potential for this element to be considered on a wider scale within the Academy by questioning the whole strategy in relation to the construction of all learning tasks, and not simply those associated with homework. I found that I stopped looking for answers and focused instead on asking interesting questions (McNiff, 2010).

5.4 Analysis of findings: Action Research Layer 1

The findings from the brainstorm activity, questionnaires and focus group sessions revealed a diminishing level of challenge as students progressed through the Academy. I particularly noted the lack of challenge perceived by Year 10 in relation to their Independent Learning Tasks and a similar pattern emerged when they were asked about questioning techniques. The findings accord with the Academy's 2011 Section 5 Ofsted Inspection report:

> Not enough of the teaching addresses the tendency for students to be very passive learners, or encourages them to probe and question their understanding. Too much questioning invites brief factual responses that do not disclose sufficient information about students' confidence in their grasp of the work.
> (Ofsted, 2011, p.4)

The quality of teaching was also questioned in the report due to limited opportunity for students to probe their own understanding and deal with their misunderstandings and this links with the diminishing level of challenge experienced by students as they progress through the Academy:

> Improve the proportion of teaching that is good or outstanding, by giving more opportunities for students, especially those in the sixth form, to explore and question their understanding more deeply, tackle misapprehensions for themselves and learn from making mistakes (Ofsted, 2011, p.5).

Communities of enquiry had developed in the lessons observed with each student feeling a valued part of the discussion and debate. Underpinning the idea of a community of enquiry is the notion of distributed intelligence suggesting that human thinking is at its richest when it occurs in ways that are socially shared and distributed. This links to Vygotsky's (1978) work suggesting that learning is a socially mediated activity allowing children to be taught concepts that are just beyond their level of development. My own comparison of Vygotsky and Piaget following discussions with staff and (see Appendix 15) students provides a useful summary of the similarities in their views which does not necessarily coincide with the findings in the earlier research layers.

As described in Chapter 4, it was interesting to note that the large number of references to examination practice (from the questionnaires) as an indicator of challenge, was substantiated during the dialogue with students in the focus group interviews (Appendix 10 - responses 1 and 8). Response 65 (Appendix 10) suggested that "we are absorbing the information but we are not getting a chance to prove what we have learnt. Currently we are doing a topic on global warming – it would be nice if we could make leaflets and go out and give them out and talk to people on the streets". This provides further evidence of the frustration felt by the students.

Although the findings reveal some correlation between what teachers and students would perceive as 'effective challenging activities' (research questions 1 and 2) there remains a gap in their views.

Starters, plenaries, questioning, exam technique and timed activities all featured in the lessons observed and were judged to be challenging by the teachers during the post observation discussions. However, the responses provided by students did not entirely match the views of their teachers (research question 3). Timed tasks (86% of student responses), exam practice (86% of student responses) and questioning (51% of student responses) were well aligned. However, starters (8% of student responses) and plenaries (22% of student responses) did not match. The discrepancy in the views linked to starters and plenaries could have arisen due to the Academy's strong focus on both of these as vehicles to improve the quality of teaching and learning. Although teachers would, in their minds, be preparing challenging starters and plenaries, the students were being exposed to a similar diet across their subjects, reducing the challenge

experienced. The sense of the unknown which often captivates students, (evidenced in the Year 10 brainstorm responses, Figure 4.1) as they enter the classroom has been reduced to 'sameness' due to the design and delivery of starters and plenaries.

Although "students at Q3 have 'a voice' and regular opportunities to express their views and opinions so that they can influence how things happen" (Ofsted, 2013:6), this has not been developed universally to encompass the practice within classrooms, and the findings of this research (see Table 4.1 - summary of brainstorm outcome and Figure 4.1) clearly indicate a need for an increased dialogue with students about what constitutes challenging activities. Teachers therefore need to embrace the contribution students can, and want to make to the learning process. Too often we underestimate students' capacity to contribute to the design of their own learning. At the same time, the dilemma facing teachers has to be acknowledged. The expectations of their performance are high, at a time when success in national and local league tables is prominent. Therefore, there has to be 'whole school change' with a hearts and minds approach where the student not only becomes the central focus but has an increasingly proactive role in designing learning.

The fourth research question '*How do teachers effectively enact challenge in their classrooms where achievement is already high',* provided the motivation to rethink the focus of my research and in doing so look more critically at a specific element of challenge. The decision was taken to focus on Independent Learning Tasks (otherwise known as homework) based on the responses from the Year 10 Geography students (fewer than 50% of the group found this aspect of their learning challenging).

The definition of homework provided by Epstein and Van Voorhis (2001, p.182) is somewhat traditional and resonates with the practice found within the Academy:

> Homework is designed to give students opportunities to practise skills taught in class, increase speed, demonstrate mastery, retain skills, review work, and study for tests.

In contrast to the traditional view, Corno (2000) and Epstein (2001) suggested that homework should be designed to engage all students in active learning, such as conducting and reporting experiments in science, writing essays, critiquing a book, or conducting other projects.

The role of the teacher is critical to the success of homework not only as an aid to learning but as a tool to motivate and challenge students. Well designed tasks can help students learn to manage their time, establish work schedules, build study skills, and develop research skills (Harvard Education Letter, 1985; McDermott, Goldman and Varenne, 1984; Muhlenbruck et al., 2000).

> When teachers design homework to meet specific purposes and goals, more students complete their homework and benefit from the results, and more families remain involved in their children's education" (Epstein and Van Voorhis 2001, p.191).

There is a mass of literature relating to homework; however the views of students are in the main unheard and remain noticeably absent from much contemporary homework literature (Xu and Yuan, 2003; Xu, 2005). Negative affect is associated with homework; therefore, one could surmise that homework tasks are perceived by students as routine and mundane with little interest ascribed to them (Warton, 2001).

Homework will have some intrinsic value since if students deem it to be important - that is, it has some utility value in being linked to grades, teacher approval, or any of a number of other outcomes they will complete it but there may still be limited intrinsic interest in the task (Warton, 2001). The vast array of research has failed to demonstrate homework's effectiveness as an instructional tool (Marzano and Pickering, 2007). There is the view that teachers should only give homework when they can justify that the assignments are beneficial, and when students take a pivotal role in deciding what homework and how much they should do (Kohn, 2006). This resonates strongly with my own stance and the evidence presented by the research, specifically the importance of engaging students in task design, and in doing so, encouraging deeper thinking skills. It is also important to remember the role of the teacher in providing an element of scaffolding to support the process.

Reference has been made to the need to open the "black box" of homework, which should make research on homework more useful in policy and in practice (Epstein and Van Voorhis (2001, p.191) and it is my intention to ensure this happens within Q3 Academy. This research has illustrated how considered planning is crucial in task design to support higher level thinking.

The potential for my position as 'Principal' of the Academy to impact on the research through my interpretations of the data, including the possibility of 'bias' had to be considered. At the start of the research journey I had a blank canvas in respect of the direction my findings would take and I had not anticipated that ILTs would become a key focus of the research taking the study into a second layer of action research. I have for some time taken issue with the success of homework and in particular the challenge afforded to the most able students through its application in the learning process. The outcomes of the first action research layer have broadened my thinking to task design in general terms – students are continually faced with tasks not just as a solution to the setting of homework but for their everyday learning in classrooms. We therefore need to examine the Academy wide approach taken to task design and in doing so engage the students as key contributors to the review process.

As the research unfolded in the first layer, and I reflected through discussions with others, constantly reconsidering and evaluating the literature, the developing research question (and sub questions) and all aspects of the action plan, my thinking moved to a new position (Macintyre, 2002). Rather than a generic focus on 'challenge' I refined the research in favour of a specific area which has persisted in being an issue – ILTs (formerly referred to as homework in the Academy). This resulted in an amendment to the fourth research question based of the emergent data. The redesigned question reflected the views presented about the lack of challenge perceived in the ILTs and provided a more focused approach to an identified area of concern which I was keen to explore further.

> *4. How do teachers effectively enact challenge in Independent Learning Tasks where achievement is already high?*

5.5 Analysis of findings: Action Research Layer 2

The first stage in the development of the research tool for the group (Student Friendly Thinking Skills Bubble) proved to be a barrier due to the lack of understanding by the students of both the language and the expectations. As the researcher I should have anticipated this problem and not assumed that their 'high ability' would necessarily lead to a clear understanding of the selected research tool. The Thinking Skills Bubble simply provided the six words (Knowledge, Comprehension, Application, Analysis, Synthesis

and Evaluation) with the expectation that the students would be able to decode them into 'student friendly language'. The students' disappointment with the outcomes from the task led to a reflective discussion with the class teacher. The task needed to be scaffolded with input either from myself as the researcher or from their teacher. Able students need teachers who ask Socratic questions that move their thinking from the literal or concrete level to the abstract or conceptual level – this approach would have eased the students' grasp of the task (Fisher, 2000). The feedback from the teacher and the students was then used reflexively to inform the development of the final version of the Student Friendly Thinking Skills Bubble.

The lack of guidance and nature of the language used in the framework prompted confusion – the terms used needed to be expanded to facilitate the students' understanding and provide an insight into their perceptions of the thinking skills needed for challenging activities. As a novice researcher I had not anticipated the issues and should have been more proactive in providing increased scaffolding for the students. I had provided limited information for the students which could have derailed the research. However, my perceptive approach and quick action to amend the research tool ensured the study remained on track.

The experience gained from the second action research layer has cemented the importance of piloting research tools (an issue which also emerged in layer 1 as the questionnaire had not been piloted). It is easy to make assumptions as the researcher; however, these do not necessarily materialize when putting the research method into action. The inclusive, collective and transformative nature of the aims of opening communicative space in the process of critical participatory action research, as highlighted by Kemmis (2008) had not worked as anticipated due in the main to lack of appropriate preparation and scaffolding.

5.6 Analysis of findings: Action Research Layer 3

The third layer engaged the students in completing two tasks. The first was typical of ILTs and the second had been designed to ensure maximum challenge. Both tasks were then evaluated using the redesigned thinking skills bubble, to measure the levels of challenge present.

The teacher took particular care when designing the first ILT to ensure that it represented typicality and asked students to:

> Read a book (factual or fiction) based on or about mountains. You need to write a detailed review about this stating what you think about it and why along with highlights and geographical sections.

The task lacked creativity, with minimal opportunity for engagement in discussion and synthesis of information resulting in limited challenge for the students.

In the design of ILT2, students were challenged at a higher level, developing an idea from inception through to the final stages before potential implementation (Appendix 14: Task 6). Students were provided with the challenge of creating a future vision for Birmingham, each student within their allocated group passed their design to another member of the group until it had been revised by three students. Students then reviewed the suggested amendments put forward before developing a final design and supporting explanation. Response 16 in Appendix 10 highlights the value placed on this approach by the students:

> I agree with peer assessment because it is a way to look at other people's work and then learn from that and then put it in your own work and then it helps.

In a shift from the traditional approach to constructing ILTs, the teacher had taken risks in developing the format and content of the exercise and it is this tactic which added the higher level challenge. The 'open' style of the second task, when viewed through a cognitive interactionist lens supported high quality interactions embracing both procedural and conceptual matters. Void of scaffolding, during the activity, the task provided opportunities for higher level transactive exchange required to resolve dissonance, explicitly rationalize proposals and opinions to solve the task (McGregor,

2010). Typically in preparing an ILT a teacher's construction of challenge would refer to the complexity of the task and its relevance to the specific syllabus rather than considering putting the onus firmly in the hands of the students in pursuing the direction of the work. Is the fear of the unexpected and the potential for failure a deterrent to the staff when weighing up whether or not they should be giving students greater autonomy in planning their own learning experiences and related tasks? I suggest this is the case, therefore strategies need to be in place to provide staff with the confidence and the courage to change their practice. By co-constructing a task with students the teacher can provide scaffolding at this stage. This will allow students the freedom to undertake the task itself with greater autonomy.

The findings from the first task clearly identified a lack of challenge as shown in the earlier tables. The opportunity to use the full range of thinking skills had not been provided for in the task. Basic requirements such as recognizing, identifying and labelling scored highly in relation to gaining new knowledge. Constructing new ideas, explaining and describing occurred more frequently when asked about comprehension of the task. The skills of solving, predicting and presenting had a zero response evidencing a real weakness when engaging students in applying their understanding to a 'real situation'. Indeed this is a weakness in many areas of teaching when staff do not take the opportunity to broaden their students' horizons using the rich source of activity outside their schools. When considering analysis within the task, the opportunity for students to differentiate, infer and justify revealed zero responses again confirming the lower order thinking skills inherent in the work. The simpler activities of arranging, categorizing, grouping, organizing and comparing were rated more favourably. Synthesis within the task was a weakness in respect of proposing, formulating, hypothesizing and justifying whereas producing, designing and constructing all received responses by more than half of the group. The final thinking skill of evaluation scored highly on criticizing and deciding but less so in the areas of appraising, judging and suggesting.

When examining the responses to the second ILT a different scenario emerges. In the area of gaining new knowledge, 'defining' and 'showing' both represented the largest change with 38% more responses. Interesting to note also is the addition by the students of three additional skills which they considered appropriate: 'justification'

‘annotation’ and ‘imagination’. This clearly indicates the students’ awareness of their own skill levels and their desire to maximize opportunities to advance their learning. ‘Summarising’ and ‘constructing new ideas from scratch’ were identified as dominant within the area of comprehension. This opportunity for students to take charge of their learning and construct the path for their task added to the challenge. ‘Solving’, ‘experimenting’ and ‘predicting’ were all highlighted as key areas in relation to applying understanding to real situations and often aspects which are not adequately catered for in the setting of ILTs. The analysis heading reflected ‘organisation’ as the main area of difference relating to the challenge offered. Again, the skills of organization can often be lacking in the expectations of these tasks. The skill heading of synthesis showed the sharpest increase of perceived challenge with planning, proposing and designing all featuring. The final heading of evaluation highlighted the skills of ‘suggesting’ and ‘deciding’ as the major areas of difference in developing challenge. The freedom afforded to the students in the second task contributed significantly to the level of challenge. Students were stretched to be creative and innovative along with having the responsibility to consider the social, environmental and political impact of their decisions (Appendix 11). They were optimistic about the second task confirming that positive emotions (and not just ‘fun’ - include also novelty, suspense, intrigue, surprise, bathos, pathos, winning, losing, happiness, excitement and achievement) are not an optional extra when it comes to learning (Gilbert, 2008). The comments made by the students, for example, “the challenge engaged my imagination and inspired detailed thinking and consideration” and “we were free to do what we wanted without restriction” (Appendix 11: responses 5 and 32), confirm the freedom to use their imagination and think independently provided the essential challenge. The second ILT therefore confirmed that, although many problems can be solved by cognitive methods, the application of knowledge is not sufficient and it is the application of metacognitive skills that moves students’ learning to a new level of awareness. In the first task students were making decisions without really thinking about them, in contrast to the second task which moved them to a stage where they were becoming consciously aware of strategies, making decisions and reflecting on the process (Fisher, 2000).

The teacher in charge of the group articulated the increased motivation and enjoyment expressed by the students when completing the redesigned task. Creativity was high on

the agenda – they did not appreciate simplistic tasks and were keen to engage in extended research projects to fully appreciate the nature of work they were engaging with. The transcription of the focus group interview which followed the second Independent Learning Task (Appendix 13) revealed a number of comments referring to the more challenging nature of the task, for example:

> Response 3: We had to adapt each other's ideas and then develop our own after three people had already added to it.

Self-regulated learning is often seen as an important goal of education, where the learner has enough metacognitive awareness and sufficiently well-developed 'study skills' to operate as an independent learner – rather than being dependent upon a teacher to offer direction whenever a decision needs to be made (Taber, 2007). A further example (Appendix 14) of a challenging ILT (Similarities and Differences: Tic, Tac, Toe Project) requiring all students to start from a common base by selecting task 1 and then progress to complete three additional tasks of their choice over a set period of time. This gave the students a degree of autonomy to decide on their preferred tasks and added to motivation levels (Appendix 11, response 32).

5.7 Summary of the analysis

Through a process of three action research layers it has become clear that students thrive on learning which provides challenge – 'spoon-feeding' which is often a typical teacher activity has no place in the learning diet of an able child. Students wanted the autonomy to design elements of their own learning and change the direction of tasks. This naturally requires teachers to look carefully at their pedagogy with a willingness to embrace change.

Effective challenge then, means not just gaining information and integrating it into an existing knowledge base, it also involves directing the students' attention to what has been assimilated and the relationship between the new information and what is already known, so they are aware when something new has actually been learned (Fisher, 2000). My challenge as a leader of learning is to find the most effective combination of strategies to ensure that all students, not just the most able, are challenged every day, in every classroom.

Chapter 6

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE PRACTICE

6.1 Contribution to professional knowledge and implications for practice

I embarked on this study to find answers to questions, and in doing so make a difference to the learning experiences of the most able children. I wanted to discover the understanding students and their teachers had of challenge, and unearth effective examples of challenging teaching and learning. A very interesting path developed which has already effected change within the Academy and will continue to impact on a growing scale. Three key areas of development which have already started to emerge as a result of my inquiry are co-constructed task design, Socratic questioning and thinking skills.

Co-Constructed Task Design

To be effective, schools should encourage students to take on increasing levels of responsibility for monitoring and directing their own learning. Students today have an almost limitless access to information and if we consider the applications they use on a daily basis to gain new knowledge and information, it would be fair to say we are doing them an injustice by some of the archaic approaches used in the classroom for task design. If we take a moment to consider the success of the gaming industry in capturing the attention and interest of the vast majority of young people we should be asking the question, "Why are we struggling to achieve mandatory participation while the entertainment industry is proving wildly capable?" (Barab, Aricia and Jackson, 2005, p.15). The latest interactive games give young people the opportunity to make decisions, design strategy, take risks and provide solutions – all areas frequently missing from teacher created learning tasks. Greater collaboration between students and their teachers is therefore essential to developing learning that provides the same motivation to engage as the latest computer game. Students should therefore be afforded the opportunity to devise tasks with their teachers and their peers pushing the boundaries of creativity and higher order thinking skills. A co-constructed approach to learning through jointly negotiated task design has the essential ingredients for success paving the way to increased challenge. The true test of this strategy will be whether teachers can live with or even actively encourage full blown co-operative classrooms, that are charged with

spontaneity, unpredictability, danger and desire; or whether they will opt for safe simulations of these things that are controlled, contrived and ultimately superficial in character (Hargreaves, 1994).

Teachers are now more than ever conscious of the pressure upon them as professionals to deliver results, and prove through residual values that they have added value to the progress of every individual within their grasp. The frequency of references made to exams, testing and revision is very clearly articulated in the transcription of the Year 11 focus group interview (Appendix 10). However, when looking back at the original 'emerging understanding of challenge' (see page 89) developed with the teachers from the Learning Community, not once did any reference to exams, revision and testing appear. The teachers made reference to the 'application of subject knowledge into new and real situations' yet this appeared to be exactly what the students were in need of as identified during the focus group interviews. In seeking to find answers to this dichotomy, I am reminded of the expectations placed upon teachers to deliver exam results to maintain league table positions. Teachers joined the profession, I expect, due to a passion for their subject and an absolute commitment to the best learning opportunities for their students. During the discussions with the Learning Community about their understanding of challenge, (Appendix 1: Reflective Journal – Entry 1) their passion for teaching and learning became infectious and this replicated itself during the lesson observations. However, on a day to day basis, when placed under pressure to deliver results there is clearly a different focus on how they approach pedagogy. This has particularly manifested itself in the views expressed by the Year 11 students who are, in essence, at the front line producing coursework and preparing for final GCSE examinations.

The Year 10 responses were the most interesting (see Appendix 8), reflecting deeper thinking about what really challenges them on a daily basis. Response six mirrored the outcomes from the questionnaire, confirming the challenge experienced when students are exposed to new learning, and it is this new learning which moves the students out of their comfort zone:

> I think we are constantly being challenged every time we learn something new. Learning is a challenge in itself really.

The enthusiasm for learning is very evident from this statement as is the understanding of what constitutes 'thinking outside the box' as articulated in response 14:

> You think about something that isn't black and white and you read between the lines about what you need to do.

Of the 65 responses only three references were made to ILTs which were still being referred to as 'homework' by the students. Two of the three comments did refer to the challenge of homework whereas the third comment via response 61 suggested an alternative way to encourage an interest in the daily news:

> Could be homework to watch the news and write an interesting fact that you have found out.

Thinking Skills

The integration of 'thinking skills' into learning tasks will have a marked impact on the level of challenge experienced by students. In addressing 'thinking skills' we can deal more effectively with the cognitive needs of able students by building into tasks elements of comprehension, application of knowledge, synthesis, analysis and evaluation. Teachers need to design purposeful and meaninful learning which promotes and encourages thinking skills.

> Educators should purposely strive to support development of thinking in their teaching. Teachers cannot enforce thinking. Just directly instructing students to think this way or that way is as didactic as 'transmission' teaching. Nurturing the development of thinking capability involves interaction with motivating learning opportunities and frequent invitations for students to reflect on progress in tasks or challenges that entice them to cogitate (McGregor, 2007, p.22).

The careful and deliberate integration of 'thinking skills' into the second ILT (Action Research Layer 3) had been the key to embedding challenge. The group were tasked with solving a problem requiring higher order thinking skills as shown in the 'Student Friendly Thinking Skills Bubble (Figure 3.7). They were able to discuss and reflect upon the elements of the task which had opened the doors to creativity, encouraged discussion and reflection, with students in a real life problem solving situation. A natural next step for the Academy would be for Curriculum Directors to work with their teams of staff and groups of students, to look at how their schemes for learning could incorporate thinking skills to provide focused real-life problem solving opportunities. We are preparing students for a rapidly changing life after school and must therefore ensure they

are appropriately equipped to deal with societal challenges which will undoubtedly present themselves. Will focused integration of thinking skills, supported by real life examples not only provide increased challenge but also enhance students' emotional capital and therefore prepare them better as future citizens to cope with the societal pressures? It has become increasingly clear that traditional methods are less successful in developing what the Greeks called phronesis, practical wisdom or intelligence, the higher-order thinking which enhances skill to the level of expertise (Fisher, 2008).

Socratic Questioning: a two-way process

Socratic questioning draws out true knowledge from within rather than imposing knowledge from outside and is a co-operative enterprise pursued through dialogue (Fisher, 2008). To maximize challenge Socratic questioning needs to be a two-way process. Questioning should not be the preserve of the teacher (Taber, 2007); students need to have shared ownership of this critical aid to successful and challenging learning. In lessons, approximately five times as many closed questions as open questions tend to be used (Harrop and Swinson, 2003). Socratic questioning will therefore provide a stimulus for thinking and responding, and differs from random, open-ended questioning in that it follows a pattern, a progression of follow-through questions that probe reasons and assumptions, and take the enquiry further (Fisher 2008).

During the Year 10 focus group interview (Appendix 8: responses 39 and 52) the students made reference to questioning, confirming its importance in relation to the challenge they perceive. Further evidence from the outcomes of the Year 11 focus group interview highlighted the significance of peer questioning (Appendix 10: response 14). The underlying issue of teachers imposing knowledge to meet the requirements of the examination system and the repetitive nature of associated questioning surfaced in the Year 10 focus group interview (Appendix 8: responses 30 and 34). This practice limits the scope for increased challenge and is an area schools need to address – there is no reason why two-way Socratic questioning cannot be used extensively in teaching and learning. This will be particularly important when helping students to prepare for examinations, by removing the didactic nature of the approach often taken. A positive example of classroom practice cited a Science lesson where students were being challenged and pushed through an effective approach to questioning:

> When teaching deliberately stimulates reflection and probes understanding students respond with enthusiasm. For example, in one science lesson, the teacher relentlessly questioned students' grasp of the reasons behind the temperature dependence of the action of an enzyme. They rose to the challenge and, in the process, enjoyed developing a rich understanding of the work (Ofsted, 2011, p.5).

Good questioning techniques will inevitably lead to a philosophical community of enquiry and: "within this safe environment children have the opportunity to question, to be critical and to be creative (playful with ideas, and applying imagination to their thinking). A good dialogue is about challenge and wrestling with ideas" (Fisher 2008, p.130). For example in the Year 7 Maths lesson observed, students were given an envelope task passing the responsibility to them to distribute questions and make decisions. The Year 9 English lesson provided for a peer group activity which engaged the students in 'unpicking' an activity and interrogating the meaning of the assigned text. A feedback session during the Year 10 Geography lesson challenged the students with questions like 'Where is the evidence?' and 'How do you know?' In the Year 11 Science lesson the teacher used challenging questioning to move the students thinking from GCSE type responses to AS level answers.

Part of the questionnaire asked students to suggest three 'other things that would challenge them in lessons. It was interesting to see Year 7 students regularly referring to 'learning a new language' with no reference to questioning. However, Year 9 students were predominantly referring to being given more difficult questions and this pattern repeated itself in Years 10 and 11. However, exam questions and revision techniques were the dominant strategies cited by Year 11 students. The pressure felt by Year 11 students as they prepare for external examinations became evident from all angles of the research, and the manner in which lessons are delivered in response to the urgency needed to complete the various syllabuses, often removed the capacity for creativity and challenge.

Dealing with barriers to change

My research has indicated that students can have a powerful input into the learning and teaching process and they need to be given increased responsibility to contribute to this critical area; working in classrooms based on social constructivism. New opportunities for teachers and students to co-construct tasks which include thinking skills, and to take

shared responsibility for questioning will lead to increased challenge, not just for the most able but ultimately all children.

We need to ensure that classrooms are not seen as places of reproduction and replication. Rather, learning and teaching should to be about expanding the space of the possible and creating conditions for the emergence of the as yet unimagined. In this frame, education is not about convergence onto a pre-existent truth, but about divergence. Learning and teaching are recursively elaborative processes for opening up new spaces of possibility by exploring current spaces (Davis and Rimm, 1998).

However, this will not be an easy strategy to implement, since social and traditional values continue to be the main stumbling block for children's participation (Percy-Smith and Thomas, 2010). The proverb 'children should be seen and not heard' remains prevalent in diverse socio-cultural contexts, where children's capabilities are generally undermined by adults, and it is not considered important to take their views into consideration in decision making processes.

Teachers may also question the rationale for change if they are already demonstrating that they are meeting the requirements of external accountability – why would they want to change their practice if they are generating positive residuals and consistently good examination results? My response is simple – students deserve the best; too often they become dissaffected with learning (Bruner, 1996) and we cannot allow this to happen. Staff in the Academy are embracing the culture shift and the change is becoming evident as noted in the recent inspection (Ofsted, 2013, p.5):

> As a result of staff training, sixth form teaching is now good and some is outstanding. Teachers are now setting challenging tasks, have high expectations of students' participation and ask probing questions.

I feel confident that teaching and learning which models effective task design, probing questioning and thinking skills has now emerged which the Academy can disseminate more widely. This can then begin to address the issue of challenge and cognitive engagement, not just with ILTs (homework) but all learning tasks.

6.2 Recommendations and future research

I now find new doors have opened, enabling me to work collaboratively with both staff and students to embed challenging activities as an essential ingredient to successful learning across the Academy. I was fortunate to be able to carry out the research within the confines of my own environment, having the advantage of being familiar with the culture, the people, the policies, the routines, in fact the whole ethos (Macintyre, 2000).

As a researcher I confronted new territory, knowing that I too would be stepping outside my comfort zone - an aspect of challenge highlighted by students in the early stages of the study (Table 4.1; Figure 4.1) My own understanding of teaching and learning and the specialist niche of what needs to happen to ensure able students are appropriately challenged developed at a pace. This has accelerated my focus on driving this critical area, reinforcing support for risk taking and encouraging staff to take a leap of faith. The collegiate approach to improving pedagogy is reaping rewards and this is evident from the recent OFSTED Inspection report (2013, p.6):

> The 'in-house' professional development and training that they (senior leaders) provide for academy staff is outstanding and is reflected in the amount of good and outstanding teaching and in the above-average progress made by students.

I am now firmly rooted in the belief that learning is not just about giving students new knowledge; it is more a case of how they use knowledge, analyse, synthesise and apply it. It is also about teachers having the confidence to take risks and increasing the autonomy given to students. Breaking away from traditional methods I was drawn to the capacity of students to become more independent and in control of their learning. The need to collaborate and engage in peer debate also became a strong thread in the findings of the research.

The outcomes of the research have prompted a gradual change in the culture of teaching and learning across the Academy. Teachers needed to see some of the strategies for change being modelled by their colleagues. This was initiated through presentations at Monday morning briefings where staff began to share strategies which had proved effective in their own classrooms. As this became embedded more staff were willing to cascade practice to their colleagues. This has now moved a stage further with some

departments organizing their own Teach Meets where staff reflect on, and share best practice that has emerged during the week.

Implications for the future

This study has been a huge challenge for me both personally and professionally. Having embarked on the research at a critical point in the development of the Academy I took the risk of not being able to see the study through to its conclusion.

Fortunately, the action research approach proved to be complementary to the journey of the new Academy and my evolving role as Principal and I was therefore able to pursue the study to completion.

The quality of teaching and learning and the subsequent challenge experienced by students have been high on the Academy's agenda since its inception in September 2008. This coincided with the commencement of my doctoral programme and the subsequent theme for the associated thesis. During the period of the study, as Principal of the Academy, I have played a key role in two Section 5 Ofsted Inspections (February 2011 and March 2013). The Academy's overall judgment has moved from 'Satisfactory' (2011) to 'Good with Outstanding features' (2013). The key factor in establishing the shift has been the marked improvement in the quality of teaching and learning. The number of good and outstanding teaching is now at 85% compared to 60% in 2011. The 2011 Inspection (OFSTED, 2011, p.5) highlighted the need to improve the proportion of good or outstanding lessons to provide challenge to students by:

- refining teachers' use of questioning in lessons so that feedback about the quality of learning checks and develops students' understanding
- giving more opportunities for students, especially those in the sixth form, to explore and question their understanding more deeply, tackle misapprehensions for themselves and learn from making mistakes.

The latest inspection (OFSTED, 2013, p.5) recognized the shift:

> In the best lessons, students are helped to engage fully in their learning and in the learning of others through group and paired activities. In these lessons, teachers equip students with the skills to work in small groups, facilitate learning and allow time for students to think deeply about what they are doing. In an English lesson in Year 9, for example, students reported that they really enjoyed an activity where they had to do sufficient research to become an 'expert' before teaching what they knew to others. Learning experiences like these were described as 'memorable'.

The challenge now is to ensure that all lessons are outstanding and memorable for students. This has implications for staff development. Although the Inspection report has now deemed continuing professional development in the Academy to be 'outstanding' there is still work to be done with classroom pedagogy. Where the teaching is not yet good or outstanding teachers:

- dominate the learning conversations
- do not give students time to engage in the activities set
- ask questions that demand a single right answer and require little or no creative thinking
- fail to provide suitably challenging activities for the most able.
  (OFSTED, 2013, p.5)

The issues surrounding transformation in pedagogy link back to the barriers to change highlighted on page 120. A small proportion of teachers have difficulty in reverting from a formalized teaching environment to one where the student is a key player in the learning landscape. As Principal of the Academy I intend to pursue this issue to a successful conclusion. However, I recognize that teachers may well consider shifts in their practice as potentially hazardous and uncomfortable, particularly when they are fulfilling the requirements of external accountability in the form of examination results and student residuals. They may well question why students should have greater autonomy and power in designing learning and my answer will be that every student should be given a voice. Although there is official endorsement of the notion that students have a right to voice their opinions and should have some involvement in decision-making affecting their lives, the implications of these arguments for day-to-day practice are less clear and sometimes contentious (Flutter, 2007). This links with Rudduck and Fielding's (2006, p.219) concern about whether "the climate is appropriate in terms of trust and openness and who might feel (or what might be) most at risk as a result of introducing student voice."

This study has also highlighted the importance of teachers working collaboratively and reflecting on their practice. By engaging students and their teachers in a well-constructed dialogue about teaching and learning through an action research approach, I have been able to gain a deeper understanding of the essential strategies needed to challenge all students (Appendix 1: Reflective Journal – Entry 1).

I had not anticipated a happy ending or solution, because there is no such thing. Life is ongoing, and the end of one thing becomes the starting point for another. The aim is always to find ways of making life more interesting, meaningful and fulfilling. This is an area I need to ensure staff understand and are 'on board' with particularly in a climate where ILTs would be a small element of the larger and complex agenda for change. The learning process will always be subject to change and McNiff's (2010) idea of generative transformational evolutionary systems resonates with the journey I am on with my staff in that our work is always in process and growing. I have been impressed by the level of reflection staff already engage with and this is evident across the Academy.

The Future Landscape

The Coalition Government has proposed change to the education agenda and already new initiatives and policies are emerging at a pace. However, it is with disappointment that Michael Gove (Secretary of State for Education), believes that the National Curriculum should be factually based. In the Schools White Paper (DfE, 2010, p.10) the Executive Summary makes reference to a "review of the National Curriculum, with the aim of reducing prescription and allowing schools to decide how to teach, while refocusing on the core subject knowledge that every child and young person should gain at each stage of their education."

> It's not enough to just teach knowledge, comprehension and application. In order to be truly successful and innovative, you have to teach higher order cognitive skills – skills of analysis, synthesis and evaluation. If we just teach children content built around core curricular subjects then we are not teaching them how to think (Byron, 2012, p.13).

The introduction of the English Baccalaureate 'to encourage schools to offer a broad set of academic subjects to age 16, whether or not students then go down an academic or vocational route.' I contest this approach on the basis that much progress has been made to design a curriculum fit for purpose in catering for the wide ranging abilities and aspirations of our students.

The new proposals put prescription firmly back on the agenda providing a recipe for disaffection and disengagement. When questioned about the improved ILT (Appendix 11) the student response (No. 17) 'It challenged me to be creative and innovative in a short space of time. This was challenging for me as I am not at all creative', suggests

prescription is not the answer. It would also appear that Mr Gove contradicts himself when he states that:

> Our schools should be engines of social mobility, helping children to overcome the accidents of birth and background to achieve much more than they may ever have imagined' (DfE, 2010, p.6).

Will they achieve much more if they are not provided with a challenging learning environment? Since opening, the Academy has succeeded in dealing with many issues of social deprivation, mobility and low aspiration by providing an environment which has challenged these issues. A change in ethos, culture and a 'can do attitude', supported by a personlised curriculum have all contributed to the rapid improvement in the quality of teaching and learning. This has impacted on attainment. In 2012 77% of Year 11 students at the Academy achieved five or more GCSEs at grades A*-C including Maths and English, representing a jump of almost 50% since opening in 2008. This did not happen by chance or by tight prescription about what groups of students should or should not do. The growing success has evolved as a result of increased collaboration between staff and students and a greater understanding of what a student needs to have in order to succeed in their learning.

My research has kick started a desire by staff to question their practice, share strategies for effective, challenging learning, listen to feedback from their students and reflect more critically on their teaching. The final piece of the jigsaw will be to increase the number of teachers engaging in research which is a powerful aid to change as they themselves become the agents of change, moving towards a more collegiate approach to improving classroom practice. There is an abundance of good practice within the Academy but either a lack of willingness or indeed time to share effectively with colleagues often prevents this being fully cascaded. In essence teachers need to embrace the impact on learning of the rapidly changing environment in which we all play a part and their willingness to be a key player in this constantly changing arena will determine the future success of our students.

This study has challenged me to reflect more critically on the whole process of educating young people and particularly how to support and nurture their cognitive skills. I have been able to appreciate the value that students place on teachers who show a genuine

interest in what they think about their learning experience. The findings enabled me to take a step back at each stage and reflect to consider the next best path to take with the research. If further improvement or investigation needed to happen I would take action and then stand back to assess whether I had achieved what I had set out to do. If not, I would try other ways until I felt confident that improvement had happened (McNiff, 2010).

As Headteachers and Principals do we make time to reflect on our core business of teaching and learning? Until embarking on this study I did not devote enough time to this. Reflection is a much used word, with meaning varying from 'vaguely thinking back to or commenting on an incident' to detailed written records of as much as can be recalled of an event (Mason, 2002). Schon (1983 and 1987) coined the terms 'reflection on action (thinking back afterwards), 'reflection in action' (being aware of while engaging in a practice) and 'reflecting through action' (becoming aware of one's practice through the act of engaging in that practice. Work by both Schön and Kolb has given reflective practice currency in recent years, using and applying a basic principle of reflecting on experience to improve action and professional practice. When discussing reflective practice, Jasper (2003, p.23) refers to a 're-focus' of our lenses in order to see things in a different way. She suggests we do this without thinking when we are dealing with the physical processes of trying to see in the dark. We automatically refocus our lenses to pick up on different cues that we don't need to use in daylight, and the ones that we normally use retreat to the background as they are redundant in those circumstances.

In conducting this research I have been able to distinguish between reflection, critical reflection and reflexivity. Reflexivity is about acting on reflections, rather than just proposing what you could have done or might do next (McGregor and Cartwright, 2011). This is exactly the approach taken as I moved through the action research layers, continuing to reflect, filter information and respond to the emerging findings.

This research has highlighted how the Principal of a learning institution can lead and shape an aspect of teaching, learning or the curriculum by applying an action research approach. I have shown how this can be used to support and encourage staff to reflect and become reflexive, and in doing so cultivate a desire to become researchers of their own and others' practice. I have also indicated how action research can be inclusive and

involve students to contribute to informed change. Students have a powerful repertoire of knowledge about their learning and we need to share more frequently a dialogue with them about their experiences – they deserve the best that we can give them.

Main text - word count: 43,358

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Appendix 1: Extract from Reflective Journal

Item No	DATE	EVENT	REFLECTIONS/THINKING POINTS	COMMENTS (inc. how do these connect with my Research Qs?)
1	22/01/10	Learning Community Meeting	Discussed and agreed a shared understanding of 'challenge'. Identified the lessons to be observed in relation to looking at the level of challenge. Selected Yr 11 Science, Yr 10 Geography, Yr 9 English and Yr 7 Maths - I wanted to include the core subjects and a humanities subject. To be more collaborative I decided to approach the observations as 'Lesson Studies' so that both staff and students felt valued and involved.	I gained an insight how staff perceived and managed for challenge in their classrooms. Realised their views were constrained because working the students harder and pushing targets and exam revision constituted challenge in their view. Sub question (d) 'How do teachers effectively enact challenge in their classrooms where achievement is already high?'
2	24/02/10	Planning Meeting	Discussed process for 'Lesson Studies' and agreed dual staff approach to facilitate discussion about challenge. Agreed to record lessons in the learning studio.	As above.
3	02/03/10	Questionnaires issued and followed by Student Focus Group sessions.	Year 10 Geography	Sub question (a)'What do able students perceive to be 'effective challenging activities?'
4	03/03/10	Questionnaires issued and followed by Student Focus Group sessions.	Year 11 Science	Sub question (a)'What do able students perceive to be 'effective challenging activities?'
5	04/03/10	Questionnaires issued and followed by Student Focus Group sessions.	Year 7 Maths	Sub question (a)'What do able students perceive to be 'effective challenging activities?'
6	05/03/10	Questionnaires issued and followed by Student Focus Group sessions.	Year 9 English	Sub question (a)'What do able students perceive to be 'effective challenging activities?'
7	16/03/10	Lesson Study	Year 10 Geography	Sub question (d) 'How do teachers effectively enact challenge in their classrooms where achievement is already high?'
8	18/03/10	Lesson Study	Year 7 Maths	Sub question (d) 'How do teachers effectively enact challenge in their classrooms where achievement is already high?'
9	18/03/10	Lesson Study	Year 9 English	Sub question (d) 'How do teachers effectively enact

				challenge in their classrooms where achievement is already high?'
Item No	**DATE**	**EVENT**	**REFLECTIONS/THINKING POINTS**	**COMMENTS (inc: how do these connect with my Research Qs?)**
10	22-25 March 10	Post lesson study discussion	Staff group	Sub question (b)'What do teachers of able students perceive as 'effective challenging activities?'
11	29/03/10	Learning Community Meeting	Shared initial research findings with staff group	Sub question (c)'How far do the views of students and staff corroborate each other?'
12	April – May 10	Full analysis of results followed by meeting with Learning Community	Discussed ideas about the next stage in the research.	
13	24/06/10	Tutorial meeting. Discussed research findings so far and considered possible angles for developing the study. Discussed 'thinking skills' and the importance of these in relation to the students' independent learning tasks.	Will explore Bloom's taxonomy to see if can 'translate' it for students to use and reflect on their thinking to achieve the ILTs. This will support further research with the Geography group when they return in September 2010 as year 11 students.	Collecting students views of the thinking in ITLs will provide evidence that will count towards RQ1.
14	30/06/10	Research Seminar: Professor Stromach	'Cargo Cult of mythic institutionalism which began in the era of TVEI. Lord Young – emphasis on the knowledge economy. 'If it can't have a label and be measured – it can't be real'. 'In the crucible of classroom experience teachers invent themselves'. 'The gift of teacherness is in the hands of the pupils'.	
15	06/07/10	Conducted Learning Walk and discussed with students their feelings about ILTs.	Wide range of comments from the positive to negative aspects. Students not motivated by the 'finishing off' tasks. Do not like the repetitive starter activities used in all lessons. Enjoy research and project based tasks. Use of the Learning Diary to record ILTs is limited	Further emphasized the need to focus on the area of ILTs in order to effect change. Need to draw out the effective ILTs and consider how higher level 'thinking skills' can be incorporated to ensure maximum challenge for able students.
16	12/07/10	Produced Action Research Diagram and ILT Core Task Sheet	Will I need to use examples of action research cycles from theory e.g. Elliott's Action Research Model, O'Leary's Cycles of Research?	
17	14/07/10	Learning Community Meeting	Outlined proposed 'thinking skills' approach to ILTs. One of the staff will attempt to work with the students to rewrite the Blooms Taxonomy into	Is the work with the Geography group likely to be sufficient to 'break new ground'? Should I consider focusing the research

			'child friendly' language.	on the group I teach or remain in the role of 'outsider'? By continuing with the Geography group the teacher is being empowered.
Item No	**DATE**	**EVENT**	**REFLECTIONS/THINKING POINTS**	**COMMENTS (inc: how do these connect with my Research Qs?)**
18	17/07/10 18/07/10	Read texts relating to Action Research Koshy, V. (2010) Action Research for Improving Educational Practice. Sage:London Burton, D. & Bartlett, S. (2005) Practitioner Research for Teachers. Paul Chapman Publishing: London Wilson, E. (2009) School-based Research. A guide for education students. Sage: London	Extracted information relating to the history associated with Action Research. Began to write background info re. Action Research.	Need to consider the quantity of information relating to Action Research needed for the thesis.
19	20/07/10	Tutorial Meeting	Discussed AR Funnel and the need for reviews. Considered the use of ILTs with the Year 10 Geography group and decided on next stages.	
20	20/07/10	Trial of draft thinking skills bubble	This did not work as expected. The group found difficulty expressing themselves as the 'bubbles' did not expand on the meaning of the terms.	Will need to refine this if I am going to get good data for my research – needs to be 'student friendly'.
21	24/07/10 25/07/10	Further reading in the area of Action Research. Costello, P (2007) Action Research. Continuum: London	Extracted relevant references for methodology chapter.	Similar information arising across all the texts. Need to 'slim down' the quantity of information to ensure quality.
22	31/07/10 To 15/08/10		HOLIDAY	
23	16/08/10 17/08/10	Refined Action Research Funnel Reviewed notes made from reading and extracted appropriate information for the methodology chapter.	Are the two stages adequate? What about the research conducted with Years 7, 9, 10 and 11 – should this be part of the Funnel? How do I begin to condense the mass of information?	

24	28/08/10 29/08/10	Began to write draft methodology chapter. Searched the internet for research papers to access additional references.	Much of the information accessed referred to similar points and particular writers appeared regularly e.g. Kemmis, Hargreaves, Hopkins	
25	30 Aug to 5 Sept	Continued to work on draft of methodology chapter. Submitted draft to tutor	Still overwhelmed by information and need to establish exactly which aspects of my research will be used.	
Item No	**DATE**	**EVENT**	**REFLECTIONS/THINKING POINTS**	**COMMENTS (inc: how do these connect with my Research Qs?)**
26	09/09/10	Tutorial Meeting	Discussed progress with Methodology chapter submitted, amendments to AR Funnel also agreed. Additional reference sources recommended.	
27	18/09/10	Amended AR Funnel to include the first phase of research.	Essential to the full picture of the evolving research and subsequent diversion.	
28	26/09/10	Read recommended sections from 'Developing Thinking, Developing Learning' McGregor, D. (2007)	Supported notes on open-ended questions – produced two page summary. Very useful	
29	03/10/10	Began to extract useful references from 'You and Your Action Research Project' McNiff, A & Whitehead, J. (2010)	Clarified thinking and approach.	
30	14/10/10	Tutorial Meeting	Discussed Elliott's work and relevant books/papers to be accessed. Also discussed the four pronged power base i.e. Teaching and Learning group, Class Teacher, Students and myself as the Principal – try to use in conjunction with the 'daisies' paper.	
31	17/10/10	Amended AR Funnel	Now incorporates 'Plan, Act, Observe and Reflect.' This covers three layers beginning with my concern about the lack of challenge offered to G& T students in the Academy and the initial research conducted. The second layer progressed to a more specific group of students based on the findings from the first layer. The final layer introduced a 'student	

			friendly thought bubble diagram' (needs to be designed – use Deb McGregor's model to develop my own version) to capture views on the difference in challenge between two targeted ILTs (Independent Learning Tasks).	
Item No	**DATE**	**EVENT**	**REFLECTIONS/THINKING POINTS**	**COMMENTS (ie: how do these connect with my Research Qs?)**
32	27/10/10	Designed 'Student Speak Thought Bubble'	Found Deb McGregor's diagram very useful. Used to develop student friendly version with colour/graphics & exp. of each qu.	
33	Nov 2010	A great deal of work needed to ensure key events in the Academy were delivered to a high standard i.e. the official opening and the CBI event – therefore limited progress throughout the month apart from accessing and saving information for later use.		
34	01/12/10	Discussed next stage of research to be undertaken with the Year 11 Geography group. This had been delayed due to the need for students to complete assessed coursework. Date agreed with class teacher (8/12/10)	More challenging ILT to be set. Discussed content and agreed that it would be suitable for the students.	
35	08/12/10	Tutorial Meeting	Further discussion about the AR Funnel and minor amendments made to provide a more generalized approach. Final amendment made to 'Student Speak Thought Bubble' to ensure all questions were clear. Agreed to access a copy of the Sage book of Action Research (2008) Reason and Bradbury and particularly look for information relating to Participatory Collaborative Action Research.	
36	08/12/10	Final stage of data collection.	Students responded very well to the 'Student Speak Thought Bubble' and also produced individual notes relating to their	

			views on the level of challenge provided by the ILTs. This provided additional evidence to support the 'Student Speak Thought Bubble'.	
Item No	**DATE**	**EVENT**	**REFLECTIONS/THINKING POINTS**	**COMMENTS (ie: how do these connect with my Research Qs?)**
37	10/12/10	Audio recording to support work undertaken with the students on 8th December.	This gave the students an opportunity to discuss the questions as a group rather than individually provide responses as above.	
38	28/10/10	Analysis of data.	The analysis of the 'Student Speak Thought Bubbles' for both ILT 1 and 2 did highlight clear differences in the level of challenge. The students' written comments added further information as did the data generated by the audio recording of the focus group discussion.	
39	29/12/10	Re-read 'Buttercups and daisies: building a community of practice amongst teachers in a Brazilian University. Botelho, M., Kowalski, R. and Bartlett, S. (2010) Read and cited information from Swantz, M (2008) *'Participatory Action Research as Practice'* in Reason, P. and Bradbury, H. (eds) (2008) *Handbook of Action Research: Participative Inquiry and Practice*	A good link to our own Teaching and learning group within the Academy. Referenced in thesis citing the similarity with the mini groups developed from the larger core group i.e. the petals of the daisy. Useful reference in relation to participative action research which resonates with my own approach.	
40	30/12/10	Read two of Elliott's papers. Elliott, J. (2007) Assessing the quality of action *Research in Research Papers in Education, Volume 22, No2 pp. 229-246* Elliott, J. (2006) Educational Research as a Form of Democratic Rationality, Journa of Philosophy of Education,		

		Volume 40, No. 2 pp169-185		

Item No	DATE	EVENT	REFLECTIONS/THINKING POINTS	COMMENTS (ie: how do these connect with my Research Qs?)
41	14/01/11	Tutorial Meeting	Discussed plan for completing Chapters 1-5 of thesis.	
42	07/02/11	PACT Meeting (equivalent of PTA)	Concerns raised by parents about the limited nature of the ILTs being set and the frequency. Discussed current thinking about possible changes to the format and content of ILTs.	
43	10/02/11	Secondary Heads Meeting	Presentation by National Strategies highlighted the importance of 'thinking skills' in challenging and developing the quality of teaching and learning.	Useful connection to the 'Student Thought Bubble' – confirms views
44	16/02/11 17/02/11	Section 5 OFSTED Inspection	From the telephone call on 14/02/11 focus had to be on preparing for the visit.	Had to halt work on thesis.
45	19/02/11	Internet research re thinking skills		
46	27/02/11	Submitted draft Chapters 1 – 5		Feedback indicates need for more referencing and more detailed explanation of research findings.
47	28/02/11	Draft copy of inspection report received	Report confirms concerns raised in the thesis re lack of challenge.	Used extracts from the report to support comments in thesis.
48	04/03/11	Tutorial Meeting	Discussed strategies to support writing up of full thesis draft including the need for more referencing.	Grounded theory – need to link this in!
49	Mar to Apr 11	Prepare first full draft of thesis.	Writing with greater confidence – taking on board feedback from Deb McGregor – particularly the need to use more references to substantiate comments made.	

Appendix 2 Research Timeline

Date: 2010	Activity	Research Question Addressed	Research Process
January	Learning walks and earlier Ofsted feedback highlighted issues with the level of challenge experienced by able students. Track data for this group confirmed under performance over a three year period and in 2009 only 29% of the able cohort achieved their target grades. Decision taken to conduct research. This led to the formulation of the title for my thesis 'Reviewing the challenge for able students': A participatory enquiry exploring the nature of pedagogy that can enhance cognitive engagement with homework. Ethical guidelines observed. Permission obtained from Academy Sponsor. Staff encouraged to participate and permissions obtained from members of the Learning Community. Project introduced to the Learning Community. Explained my concerns about lack of challenge for able students and the need for us to collectively review our approach. I felt it was important to empower staff to engage with the process as this would then support pedagogical changes. The group reacted positively to the request to be engaged with the research and agreed to participate.		AR Layer 1 
February	Second meeting with the Learning Community to disseminate and agree the research process and discuss/refine design of questionnaire. Letters issued to parents and permission obtained from students re engagement in the research.		

March	Quantitative research: questionnaires issued to four groups of students (100 in total). Year 7 Maths (Boys:11, Girls17) Year 9 English (Boys:13, Girls14), Year 10 Geography (Boys:6, Girls:9) and Year 11 Science (Boys:16, Girls14).	(1) What do able students perceive to be effective challenging activities?	
March	Qualitative research: Focus group interviews (small groups extracted from each of the original four).	(1) What do able students perceive to be effective challenging activities?	
March	Qualitative research: Lesson Study/Observations: 4 groups (4 teachers from the Learning Community)	(2) What do teachers of able students perceive as effective challenging activities?	
April	Full analysis of research. Results prepared in a variety of charts and transcriptions.		
May	Learning Community meeting to discuss findings. Key issue arising: lack of challenge in homework (independent learning) activities.	(3) How far do the views of students and staff compare?	
June	Thinking Skills bubble diagram designed to establish extent to which which students used thinking skills in their ILTs.		AR Layer 2
July	TS diagram used with Year 10 Geography group to gain insight into understanding of 'TS' as applied to their independent learning tasks.	(4) How do teachers effectively enact challenge in ILTs where achievement is already high?	This proved to be a very thin layer due to the issues with the first design of the thinking skills bubble.
August	Redesigned TS Bubble diagram. Students found difficulty understanding the first version as the language used was unclear.		AR Layer 3

September	Student friendly TS bubble used by students to establish the TS used in a typical independent learning task.	(4) How do teachers effectively enact challenge in ILTs where achievement is already high?	
September	Students provided with a more complex and challenging ILT and asked to complete a second TS bubble diagram	(4) How do teachers effectively enact challenge in ILTs where achievement is already high?	
September	Focus group interviews to follow up information gained from TS bubbles.	(4) How do teachers effectively enact challenge in ILTs where achievement is already high?	
October	Outcomes from student TS Bubbles analysed for both ILT 1 and 2. Clear differences highlighted in the level of challenge. The students' written comments added further information as did the data generated by the audio recording of the focus group discussion.	Research is concluded and implications for future practice considered i.e.Co-constructed Task Design incorporating thinking skills and Socratic questioning. Also the benefits to be gained from staff engaging in research.	Implications for future practice are filtered through the Action Research Funnel to impact more widely across the Academy with the potential for external cascading.

Appendix 3 Learning Walk Proforma

Feedback Shared with teachers?	**Yes ☐ No ☐**	**In person ☐**	**Electronically ☐**

Learning Walk completed by:

T&L Focus this week:-

STAFF CODE	LESSON DROPPED IN (Date/Period/Subject)	T&L Focus: How many of the foci have been met?	Any additional comments? WWW EBI
STAFF CODE	LESSON DROPPED IN (Date/Period/Subject)	T&L Focus: How many of the foci have been met?	Any additional comments? WWW EBI
STAFF CODE	LESSON DROPPED IN (Date/Period/Subject)	T&L Focus: How many of the foci have been met?	Any additional comments? WWW EBI
STAFF CODE	LESSON DROPPED IN (Date/Period/Subject)	T&L Focus: How many of the foci have been met?	Any additional comments? WWW EBI
STAFF CODE	LESSON DROPPED IN (Date/Period/Subject)	T&L Focus: How many of the foci have been met?	Any additional comments? WWW EBI

Appendix 4 Student Questionnaire

*(**FIRST DRAFT**: I presented this to the 8 members of the Learning Community to test structure and use of language – useful feedback provided which led to the development of the final version)*
The purpose of this questionnaire is:

(a) To find out whether you feel you are 'challenged' (pushed and encouraged to achieve the highest standards) in your lessons.

(b) To discover the activities which you feel provide 'challenge' in your lessons

(c) To take account of your ideas for increasing the level of 'challenge' in your lessons.

Please answer all questions. Some questions will have a choice of answers, others will ask you to give your own views.

Thank you for taking the time to complete this survey.

Mrs C Badyal

Draw a circle around the image that best describes your answer.

1. I would describe the amount of 'challenge' I receive in this lesson as:



A lot Average Very little

2. When thinking about **all of my lessons** during the week the 'challenge' is:



A lot Average Very little

3. Complete the following sentence (use as many words as you need to):

I am most challenged when . . . . . .

. . . . . .

4. Read the table of activities which provide 'challenge'. Please tick all of the activities which you believe provide you with the most 'challenge' in your lessons.

ACTIVITY	
Starter activities	
Group work	
Examination practice/revision exercises	
Reference to your target grades	
Use of games	
Questioning techniques	
Rewards	
Interactive whiteboards	
Extension work	
Independent Learning Tasks (Homework)	
Using ICT	
Positive comments	
Traffic Lights (red, amber, green) system for assessment	
Timed tasks	
Research tasks	
Plenaries	
More difficult work set	
Practical Tasks	
Drama and movement tasks	
Teachers' written comments	

5. The three things that would provide me with the most 'challenge' and help me to be the best that I can be are (these **do not** have to be taken from the table above):

   a)

   b)

   c)

Appendix 4a Student Questionnaire (Final version)

Distributed to:

Year 10 Geography group: 15 students (8 male, 9 female) - 2nd March 2010
Year 11 Science group: 30 students (16 male, 14 female) - 3rd March 2010
Year 7 Maths group: 28 students (11 male, 17 female) - 4th March 2010
Year 9 English: 27 students (13 male, 14 female) - 5th March 2010

The purpose of this questionnaire is to find out:

(a) whether you feel you are 'challenged' (to do your best) in your lessons;

(b) which activities you feel 'challenge' you the most;

(c) how you feel 'challenge' in your lessons could be improved.

Please answer all questions. Some questions will have a choice of answers, others will ask you to give your own views. ***You do not need to include your name.***

Thank you for taking the time to complete this questionnaire. Mrs C Badyal

Year Group _____ **Male/Female** _____

Draw a circle around the image that best describes your answer.

1. The amount of 'challenge' I receive in this lesson is:



A lot Average Very little

2. Overall the 'challenge' in **all of my lessons during the week** is:



A lot Average Very little

3. Complete the following sentence (use as many words as you need to):

I am most challenged when . . . . . .

. . . . . .

4. Please tick all of the activities which you believe provide you with the most 'challenge' in your lessons.

ACTIVITY	
Starter activities	
Group work	
Examination practice/revision exercises	
Reference to your target grades	
Use of games	
Questioning techniques	
Rewards	
Interactive whiteboards	
Extension work	
Independent Learning Tasks (Homework)	
Using ICT	
Positive comments	
Traffic Lights (red, amber, green) system for assessment	
Timed tasks	
Research tasks	
Plenaries	
More difficult work set	
Practical Tasks	
Drama and movement tasks	
Teachers' written comments	

5. Can you think of **three** other things that would 'challenge' you in your lessons (these **do not** have to be taken from the table above):

   i)

   ii)

   iii)

Appendix 5 Letter to Parents

1st February 2010

Dear Parents/Carers

I am writing to seek your permission for your son/daughter to contribute to a project I am completing as part of an Educational Doctorate.

Your child would be invited to complete a questionnaire, participate in a 'Focus Group' discussion (s), and a video-recorded lesson observation. The purpose of the research is to establish the extent to which our higher ability students are challenged to maximise their potential and also to consider which methods of teaching and learning are best suited to their needs.

I would like to begin the research during the week beginning 1st March 2010.

If you are willing to support this research please complete and return the attached 'Permission Slip' by Monday 8th February 2010.

If you wish to discuss the research please do not hesitate to contact me.

Thank you in anticipation of your support.

Yours sincerely

Caroline Badyal
Chief Executive

CONSENT TO PARTICIPATE IN RESEARCH

I confirm that I am willing for my son/daughter to participate in research involving Questionnaires 'Focus Group' discussions and 'Lesson Observation' recordings.

Name of Child _____Tutor Group _____

Company _____

Signed (Parent/Carer) _____ Date _____

Appendix 5a

ETHICS STATEMENT

I am undertaking an action research project to establish the level of challenge experienced by 'able' students within the Academy. This ethics statement is to assure you that I will observe good ethical practice throughout the research.

This means that:

- ✓ the permission of the Sponsor has been secured before the research commences;
- ✓ the permission of the students and their written consent will be secured before the research commences;
- ✓ the permission of the parents/carers for their children to participate will be secured before the research commences;
- ✓ the agreement of staff participants will be secured before the start of the research;
- ✓ confidentiality will be observed at all times, an no names will be revealed;
- ✓ participants will be kept informed of progress at all times;
- ✓ participants will have access to the research report before it is published;
- ✓ I will report only that which is in the public domain and within the Law;
- ✓ all participants have the right to withdraw from the research at any time and all data relating to them will be destroyed

Caroline Badyal
Chief Executive

Appendix 6 Student Video and Photographic Consent Form

Student Name: _____ Tutor Group: _____

Parent/Carer Name: _____

Q3 Academy would like to use photographs/video images' of your child. These can be used to demonstrate or promote activities relating to the Academy's curriculum and extra-curricular provision.
Before we can use such we need your permission. Could you please therefore tick the relevant boxes and sign below to give your consent for photographs/video images of your child being used. Please also indicate whether you consent to your child's name being associated with their image.

SOURCE	In Academy Materials aimed at the Academy Community	On the Academy website*	On the LEA Website*	In Media Coverage of the Academy	**I agree to information being passed to Connexions**
I agree to use of students Image for:					
I agree to student being named in:					

***Please note that Internet Website can be viewed throughout the world and any personal information on them will go beyond the UK and the European Area.

CCTV is in use throughout the Academy in support of the Academy ethos and policies, please refer to the CCTV policy for further information if required.

I/We confirm that I/we have read and agree to the terms contained within this Consent form.
Parent/Carer Name: _____

Parent/Carer Signature: _____ Date: _____
Student Signature: _____ Date: _____
(if over 12 years old)

**********For Office use only:
Date Received: _____

Appendix 7 Staff Photo/Image/Video Consent Form

Staff Name:	

Q3 Academy would like to use photographs/video images' of you for staff recognition. These can be used to demonstrate or promote activities relating to the Academy's curriculum and extra-curricular provision.

To comply with the Data Protection Act 1998, we need your permission to use photographs of you. Please answer the question below, then sign and date the form where shown. We will not use the images taken, or any other information you provide, for any other purpose.

Please return the completed form, even if you have chosen not to give your consent, to:

May we use your image in press releases, which may subsequently appear in the local or national media?	**Yes**	**No**
May we use your image on our website?	**Yes**	**No**
May we record your image on our promotional DVD's?	**Yes**	**No**
May we record your image when observing lessons?	**Yes**	**No**
May we use your image in printed publications produced by Q3 Academy for promotional purposes? For example Newsletter/Prospectus	**Yes**	**No**
May we use your image on display boards i.e. Consultation/Parents Evening:	**Yes**	**No**
May we use your name (i.e. Mrs A N Other (not in full) to assist the images)	**Yes**	**No**

Please note that Internet Website can be viewed throughout the world and any personal information on them will go beyond the UK and the European Area.

CCTV is in use throughout the Academy in support of the Academy ethos and policies please refer to the CCTV policy for further information if required.

I confirm that I have read and agree to the terms contained within this Consent form.	
Name in Full:	**Date:**
Signature:	

For Office use only:	**Date received:**

Conditions of Use:

This form is valid for two years from the date of signing. Your consent will automatically expire after this time.

1. We will not re-use any images after this time has lapsed without updated authorisation.

2. We will not include details or full names (which means first name and surname) of any person in an image on our website, on video/dvd, or in printed publications, without good reason Example of use: Mrs A N Other. For example, we may include the full name in a press release or of a competition prize winner if we have their consent. However, we will not include the full name of a model used in promotional literature.

3. We will not include personal e-mail or postal addresses, or telephone or fax numbers on video, on our website or in printed publications.

4. All images will be removed forward on if a member of staff leaves Q3 Academy. In the case of, for example, an annual prospectus and alike, images will be removed in the next publication.

Appendix 8 Transcription of Year 10 Focus Group Interview

(n=15: 8 male, 9 female. All 'Accelerated' students i.e. identified as the most able in the Academy. The numbers represent the response number for ease of reference.

Response Number	Discussion Points/Responses (Year 10)
Researcher Prompt	*Thank you all for agreeing to participate. The first discussion point that I would like you to think about is how your teachers challenge you to be the best that you can be in your lessons. Alex I am going to ask you to start the ball rolling.*
1	The assessments because you try be as good as you can be and better than your friends. (49s)
2	I think they challenge us quite well. What challenges me the most is when we do tests and timed assessments.
3	I think it is challenging when they give us target grades because you aspire to beat it.
4	Essays are quite challenging because they recap your previous knowledge.
5	I think when your teachers give you a new topic it requires you to jot down everything you know it requires you to think a lot because you don't really have much practice.
6	I think we are constantly being challenged every time we learn something new. Learning is a challenge in itself really.
Researcher Prompt	*What about you as individuals because a lot of things you have spoken about are whole class challenges. Is there anything in particular that staff might do when they come to you as an individual to challenge you.*
7	Giving you a personal target to get a better grade.
Researcher Prompt	*That then makes you feel special I guess?*
8	Teachers' comments help me.
Researcher Prompt	*What sort of comments?*
9	Things you can do to improve in your work.
10	Constructive criticism.
11	In quite a few lessons you have extension tasks that can challenge you.
Researcher Prompt	*And are those extension tasks different?*
12	I would say they were harder parts of the work, like an added part of the work.
Researcher Prompt	*So it makes you think more?*
13	It pushes you to 'think outside the box'
Researcher Prompt	*What do you understand by 'think outside the box?' (3m:38s)*
14	You think about something that isn't black and white and you read between the lines about what you need to do.
Researcher Prompt	*Does that sometimes require you to get resources outside the lesson?*
15	Yes like going onto the internet.
16	Extension tasks.
Researcher Prompt	*Now I am looking for what activities challenge you most in lessons?*
17	When they do surprise exams (4m:57s) .
Researcher Prompt	*So this prompts you to revise regularly, not knowing when the test is going to be?*
18	I think when you have quizzes in the next lesson you try to remember what you did last lesson. Helps you to see what you find difficult?
19	Homework because I go back over what I have done in the lesson.
20	Doing a practical because you are going over what you have done in the class so that

	you can apply it.
Researcher Prompt	*How would you for example practice the theory in Geography?*
21	Well you could look at the different climates and visit them.
22	Homework – if there is something I don't get I have to go back and revise it. (7m:0s)
23	Homework as well and ongoing projects because it requires all your knowledge.
Researcher Prompt	*What about the lessons that challenge you the most?*
24	Maths and Science: – long words and formulas and applying them.
25	Business Studies because there is a lot to revise and a lot of exam questions to do.
26	French - it is easy to forget and you need to remember it for every lesson.
27	English and Maths: Maths because of the formulas and English because there is no right or wrong answer and words can have more than one meaning.
28	Maths and Business Studies. Business Studies because there are a lot of exam questions. Maths: going back over topics.
29	English is a lot of reading between the lines and bringing things out of the story that you wouldn't expect.
Researcher Prompt	*Are there any particular strategies that the staff use to challenge you?*
30	Maths – we do a lot of questions for practice – good to learn but a lot of repetition.
31	When they tell you what their expectations are so you have to work hard to meet them.
32	Exam questions at short notice.
33	When they time you and give you a word limit on your work – it pushes you like when you are in a exam.
34	In Maths we get a lot of questions – but we can get bored with it.
	Business – with the exam questions we do a lot of similar questions and you want to improve yourself each time.
Researcher prompt	*Are there any activities we could introduce that would challenge you inside and outside the Academy?*
35	I don't think there are enough clubs going on and if there are people don't know about them. I used to take guitar lessons but they were in the day and I had to come out of lessons and didn't like missing lessons. Would prefer to do it before or after school.
36	Educational and recreational trips could help because you get stuff done in a different way and some kids might find it more interesting and remember it better.
Researcher prompt	*So more visits to put what you are doing into practice?*
37	When we went to Belgium with History it made you realize the greatness of it, the scale of it all.
38	Sometimes going on trips helps to jog your memory about things – and learn the subject.
39	Learn different skills that teachers might not be able to help you with and answer questions that teachers may not be able to.
40	Trips because you can apply the subject to real life scenarios because when you are in lessons it is sometimes boring and you switch off.
Researcher prompt	Trips appear to be very popular! (17m:0s) What other things are there?
41	With trips some people switch off because they think they are for fun and not learning.
Researcher prompt	*There must be other things?*
42	I think using the ICT facilities more – we don't use them in many lessons.
43	Would like to use Sam Learning and Bite Size more in lessons rather than writing things down all the time. Sometimes websites put it into better wording than teachers.
44	If you are doing a task you could search the internet so you use different ways.
45	If you get if from the internet it will teach you about reliable sources and putting a

	bibliography together ready for when you go to university.
Researcher prompt	*Do you think there is a need for a generic skills course e.g. how to present information, produce bibliographies etc?*
46	These skills are repeated in some of our lessons. (20m: 20s)
47	I think the lessons sometimes relate to each other but they don't really repeat each other.
48	Sometimes in Science we use formulas which are similar in Maths.
Researcher prompt	*Think about your week is there anything else that could be included? Are we giving you enough challenge? What else should we be doing?*
49	I think things could be put into DES.
50	Include more team building exercises in DES because there are not enough activities.
51	Team building would be good because of the different year groups in the DES lessons.
52	We could have questions that are really hard to answer and then work in groups to solve them.
53	Do more teamwork e.g. to do a poster and be challenged to complete it first.
54	More group tasks but still doing our work.
55	In Geography we could visit the places to see them for ourselves.
56	More interactive things – in History we do debates and role plays and these help us to understand things.
Researcher prompt	*What about the media – I try to encourage my Business Studies students to read the newspaper – does this happen in any of your subjects?*
57	In English we have to understand the difference between a tabloid and a broadsheet but we don't use them in any other lessons. (25m:07s)
58	If we are asked to collect information from newspapers we end up reading the article to see if it is relevant.
59	There is a lot of stuff in the newspapers that relate to Geography e.g. disasters so we should be encouraged to read the news more.
60	We should be encouraged to watch the news more generally.
Researcher prompt	*Can you think of any slots in the Academy day when this could be encouraged?*
61	Could be homework to watch the news and write an interesting fact that you have found out.
Researcher prompt	*This is your opportunity to put your ideas on the table*
62	Maybe in DES you could discuss the recent events that have been going on in the news.
Researcher prompt	*What about setting businesses up as part of DES.*
63	I think that would be really good – the older ones would tend to lead it.
64	It would help the younger ones like the Year 7s who don't know much about business.
Researcher prompt	Do you see any problems with having 50 companies running in the Academy?
65	Yes there would be a lot of rivalry. (28m)
Researcher prompt	Thank you all for participating – you have been a great group. Well done!

Appendix 9 Example of Lesson Plan

This was used by the staff who had agreed to have their lessons observed. Plans were submitted to me and my co-observer prior to the lesson. The plans were looked at and discussed again as part of the post lesson evaluation to look at the correlation of planning for challenge compared with its implementation.

<table>
<tr><td colspan="4">Learning Planning Sheet: Maths (Accelerated Group)</td></tr>
<tr><td>Subject

Maths</td><td>Class

7A2</td><td>Date

18.03.2010</td><td>Nos. on register

28</td></tr>
<tr><td colspan="4">Context/Relevance

Algebra 3: Questions about Graphs</td></tr>
<tr><td colspan="4">Learning Objectives

To be able to solve problems involving function graphs</td></tr>
<tr><td>Activities (starters/middle/plenaries)</td><td colspan="2">Resources / Time</td><td>Assessment Opportunities (AFL)
Skills
(Literacy/Numeracy/Enterprise)</td></tr>
<tr><td>Group lists on tables in L1

News Discussion

Starter: Anagrams (including x = and y =, x axis and y axis – using arms to show direction)

Main activity 1: Introduction to 1st task, worksheet with varies levelled questions involving algebraic graphs, functions and equations. Differentiation of ability, most challenging questions answered by most able. Discussions about processes followed. Pupils to decide individual tasks.</td><td colspan="2">Pre-written seating arrangements, including range of levels

5/6 minutes

IWB

5/6 minutes(during register)

IWB - Smartboard

20 minutes

Question sheets</td><td>SMSC

Whole world issues, current events discussion. Developing social skills

Literacy and understating of function direction

Peer assessment, discussion, development of organisation skills, delegation of task.

Assessing individuals throughout task, picking out</td></tr>
</table>

Main activity2: Put task 1's questions in order of level. One representative of group to explain to others reasons behind decision. (Level indicators given) Plenary: 3 questions on board, RAG answers on whiteboards, all pupils involved RAG of understanding of lesson, on whiteboard	15 minutes, level indicators 6/8 minutes Smartboard Whiteboards and pens	any good conversations to Consolidate understanding of key components, assessment criteria Random overview of lesson, reflection on progress.
Independent Learning: N/A		
Meeting the needs of different groups of pupils (*SEND(LSA/LSP support)+G/T/LAC/FSM*)		
Evaluation		

APPENDIX 10 Transcription of Year 11 Focus Group Interview

(n=30: 16 male, 14 female. All 'Accelerated' students i.e. identified as the most able in the Academy). The numbers represent the response number – note that from response 46 I decided that it was important to identify whether it was a male or female response in the event that patterns relating to gender emerged.

Response No	Discussion Points/Responses (Year 11)
Researcher Prompt	*Good afternoon and thank you all for agreeing to participate. I am going to ask you four questions but I would like you to participate in a discussion rather than me leading the discussion. I would like you all to participate, be confident and say what you think so that we can help you to be more challenged in your lessons. Start to talk about how you think your teachers challenge you to be the best that you can be in your lessons.*
1	I think teachers challenge us by setting us a test – tests put us under pressure, helping us to feel more relaxed in exam situations.
2	Like, exam style questions so that we know what to expect – that is quite good.
Researcher Prompt	*Excellent – is it the style of question or the pressure you feel that challenges you?*
3	I think it's the pressure.
4	I would also say the independent learning – at the end of the lesson when they give you the learning task to do at home you hope that you have listened during the lesson to be able to do it effectively.
5	Yes because it tests you on your knowledge and what you have learnt because you are going to have to regurgitate it in the exam so it helps with our teacher there to help and explain.
Researcher Prompt	*Does that independent learning challenge you to go and find out new things?*
6	Yes, and research yourself.
7	It is going to help us when we have to do our case studies and we have to research stuff ourselves – its kind of practice for that.
Researcher Prompt	*Excellent – well done.*
8	The way that I personally find it challenging is in English when we do timed assessments/exam papers once a week and it just gets you to manage your time better and it is quite challenging so it helps a lot.
9	I think other challenges the teacher sets us is the different ways of teaching certain things like not just from textbooks – they use the interactive whiteboards and stuff like that so that challenges

	us as well.
10	I find Maths independent learning challenging because when you are in lesson you do it step by step but when you have to do it yourself some steps might be mixed up or you might just get confused.
Researcher Prompt	*Do you think that probably summarises that question. OK. So now let us think about the activities that really challenge you.*
11	I like when the teacher is speaking and we have to make notes – they don't tell us what to write because then it's like in the exam when we have to highlight key words – it's good preparation.
Researcher Prompt	*Sometimes when you copy from the board you just do it without thinking.*
12	It's also easier because you understand what you are putting down because it has come from you and you can revise better from it because it is your own words.
Researcher Prompt	*Good point.*
13	I like hotseats – we used to do them in our old Science classes with Mr Whittingham – I find that really helpful because it puts you under pressure again for examination purposes – it really helps because it gets the class involved and it's really fun and because you enjoy it you remember it.
Researcher Prompt	*Tell us a little more about hotseats.*
14	Someone would be questioned on the subject we had just done so say if we were doing Chemistry in Science we would get questions thrown at us about Chemistry and we would have to say and think of the answer as soon as possible and if we didn't know the answer it would get passed on to the other people and they would put their hands up to answer. It would go on say they didn't answer and someone else did they would swap places. I think that really helped.
15	I find peer assessment and evaluating my own work quite difficult because I find it difficult to see my strengths and weaknesses in my own work. I think it helps when we do it at the end of lessons.
16	I agree with peer assessment because it is a way to look at other people's work and then learn from that and then put it in your own work and then it helps.
Researcher Prompt	*Do you think you do enough peer assessment?*
17	I don't think so – we do more in English than we

	do in Maths. I think it should be in all subjects.
Researcher Prompt	*I think we had a Learning Walk focus on Peer Assessment – then everyone was doing it and indeed my group told me they were getting bored of Peer Assessment because all the teachers were doing it.*
18	Just doing it once in a while – like once every two weeks.
19	I think it's also good that we look at questions and what the examiner would mark it from. I think that's really good because we would do it again and challenge ourselves and take things from what the examiner would mark and that helps us to put it into the test.
20	I find making questions from your revision hard because it makes you think how the examiner would think.
21	Yes, definitely.
Researcher Prompt	*Any other activities that you can think of?*
22	I think that revision is quite hard – it challenges you quite a lot to settle down and do it yourself and find the right technique to just get through it and make sure that the revision sticks in your head for the exam.
Researcher Prompt	*Have you found any particular strategies or have staff used any strategies that you think are really challenging you and helping you?*
23	Using colour I find if you use colour and put it into tables and bubble diagrams it is really easy to remember and you actually remember something that is more visually attractive.
Researcher Prompt	*Good. (6m 23)*
24	In English we get cards with words that relate to the poems and that really helps because we could link them and then we would write them down – that really helped.
25	Making posters help us to revise
26	And because it's visual you can remember it in your head
27	I think if you just make it personal to yourself you will remember it
Researcher Prompt	*Lessons then – think about the lessons that challenge you the most.*
28	Business – because you have to remember the key words because they are constantly being used – you need to know them all the time.
Researcher Prompt	*Is this the BTEC Business or GCSE.*
29	GCSE
30	I agree with Business as well because it is quite challenging to apply it to a scenario you learn it

	and then you think how does this apply to businesses and it is quite challenging thinking about that.
Researcher Prompt	*Are there other ways in Business that you are challenged? Are you challenged to keep abreast about what's happening in the news, in the economy?*
31	Now and again we use real examples so that we can apply it in the exam so that we know what we are talking about. In my Business class we did Finance and because we weren't that confident Miss made us do individual presentations that we had to teach to the class. When you are taught by your peers you can relate to it better – we think we understand better that the teacher talking to us or at us.
Researcher Prompt	*I do agree with that – when your peers teach you it seems to have so much more meaning.*
32	They know what you are going through
Researcher Prompt	*What about when you prepare for that lesson – what do you think about? Does the preparation have some impact on you? Does it make you think about how much has to go in to preparing a lesson?*
33	You really have to rely on the technical stuff to work and you have to be confident and you need to know your stuff – so it puts pressure on you to get everything right and make sure you are not teaching the wrong stuff to the other people.
34	You need to have the balance as well as to how much you actually do and how much is needed.
35	So you don't go over the top and just talk about everything.
Researcher Prompt	*Also have you felt that if you talk too much the group switch off?*
36	You have to include things for the VAK so that they stay focused throughout.
37	I think in Science when we do practicals it definitely challenges the whole class because you have to make sure you put the exact amounts into what you are making and it really helps because you are getting your hands on it and controlling your won actions.
Researcher Prompt	*So we have had Business and Science. Are there any other subjects?*
38	I personally find English more challenging when we get a new poem – just looking at it and analysing to come up with your own thoughts – I find that quite challenging. It is enjoyable to think about it a lot.

Researcher Prompt	*Is part of the challenge about what the teacher will expect from you – i.e. you are constantly challenged to put more into it. (10. 40s).*
39	It is like you want to be right but you want to have your own thoughts.
40	It is like in English where we are encouraged to think outside the box.
41	Yes with your own interpretation and it is quite hard sometimes.
Researcher Prompt	*Thinking outside the box is critical rather than just being spoonfed.*
42	It still has to be within reason and not thinking outside the box too far – you have to justify your reasons and your thinking.
43	I found in English at the start of the year we had a lot of coursework and that is quite a challenge to get it complete by the deadline. We would start one piece and when we had finished start another completely different piece like starting with prose and then going on to original writing.
Researcher Prompt	*So keeping a fast pace is good then?*
44	Yes that is a challenge.
Researcher Prompt	*Because it is coursework you have to meet the deadline.*
45	And it keeps you interested.
Researcher Prompt	*Okay that is interesting about the pace – do you feel that most of your lessons are pacy?*
46 M	I think that Maths is pacy
47 F	I don't think Maths is
Researcher Prompt	*Ok lets consider why you think your Maths is pacy and yours isn't – without mentioning names.*
48 M	I think just trying to get through everything
49 F	In my set it is pacy because we have already done our exam and now they are pushing us to get As and Bs and doing revision each day on different topics. I find that really challenging.
50 M	There's lots of procedures to go through in Maths like lots of formulas that you have to remember and keep up with as well.
Researcher Prompt	*So they are keeping you on your toes constantly in Maths. (12m 46s) You two ladies are going to disagree so let's hear what you have to say.*
51 F	I think Maths is challenging and if you don't get it the teacher will let you go at your own pace.
52 F	I think the same as her – they stop and help you and I think that is better than going at a pace because people don't get it and they don't say. So they have time to be helped and know what they are doing.

Researcher Prompt	*A very interesting point. So again it depends on how you learn. Some of you may prefer it to be pacy whereas some of you need time to absorb information.*
53 F	I think there needs to be a balance
Researcher Prompt	*That can sometimes be a difficult thing to achieve – getting the balance right. OK – are there any other lessons you would like to mention.*
54 F	I think RE does – we get exam questions in the lesson based on what we have learnt – if the question is worth six marks we have to think of six things to put in it and the time limit really helps us. Then we mark the work and go around the class reading some out and then we can note down anything that has been missed so that we know what to include and what needs to be changed.
Researcher Prompt	*Excellent, so this reinforces the learning in the lesson and you know what you are aiming to achieve in the exam.*
55 M	I personally find Science quite challenging when we are doing experiments or investigations – to watch your teacher do the original one and then for you to try and replicate it and get your own results I find quite challenging.
56 F	You feel good when you have done it. It is easier to understand something when you have done it yourself – you are more likely to remember it and know how to do it.
57 M	In Science I find Physics quite hard because you get a formula and you have to apply it using your own knowledge and sometimes the steps in that are quite difficult because there are a lot of calculations involved.
Researcher Prompt	*But you like that?*
58 M	Yes it's difficult but it is challenging
Researcher Prompt	*Sometimes difficult tasks are more enjoyable*
59 F	Yes definitely.
Researcher Prompt	*The fourth and final question then – are there any activities we could introduce in the Academy either during the day or at the end of the day. Anything that you think would help you to be better challenged and prepare you better for life after the Academy.*
60 F	I think perhaps for Higher Level students like us we should have the opportunity to do revision for say English in the DES sessions but only the lower sets get to do this. So now we have to go to DES as normal and we don't get the

	opportunity.
61F	I think DES should be used for coursework catch up because I think that some of the things we do in DES are not exactly pointless but used for better things.
Researcher Prompt	*I accept that. What about if you were leading the DES sessions with the staff?*
62F	Yes, at the start of the year when we had to do presentations it was better than just learning about Design and Enterprise because some students don't respond well especially the younger years in the vertical group. (17m 22s).
Researcher Prompt	*That would help you to develop your leadership skills and presentation skills. The idea really is that DES encourages the older students to support the younger students in the group. We have also consider the DES sessions to be the forum for setting up 50 companies across the Academy but this needs some further thought.*
63F	That would be more exciting for us – we could get stuck in
64M	That would be a challenge in itself to apply your own knowledge and teach people that are younger than you – it would be really good.
Researcher Prompt	*Are there any other activities then that you think we could get you involved in?*
65F	I think we should do more projects – in lessons such as Headstart where we learn everything and the exam is optional we should do topics. Basically we are absorbing the information but we are not getting a chance to prove what we have learnt. Currently we are doing a topic on global warming – it would be nice if we could make leaflets and go out and give them out and talk to people on the streets.
66F	I think trips really help as well – say in RE we were talking about pilgrimages so it would be nice to go on a pilgrimage to see what religious people go through, why they do it and where they go.
67F	And if you can put yourself in their place you know what they went through when you are writing about it – so it's not just a picture.
Researcher Prompt	*It's like the student who said to me last week when he went to the desert on holiday it helped him to understand deserts in Geography.*
68M	I think revision techniques to help us apply our knowledge. If we had more knowledge about how to do it and stay focused it would be easier.
69F	Like booklets – that would definitely help.

Researcher Prompt	*You are possibly going into our sixth form it may be that you want somet5hing that is going to challenge you and prepare you for going into the sixth form. We are currently thinking about the structure of your induction week.*
70F	I think the JETS is good and we should have a trial of this. A group who are interested could see what it is like and get some experience of it.
71M	I think that in the induction week the new 6th formers should have a sense of authority and maybe take a lesson on something that they have studied at GCSE to apply it what they are going to be learning in sixth form as well.
Researcher Prompt	*That is a very good idea.*
72F	I think that the sixth formers currently should be telling us Year 11s what the sixth form is about and from their point of view because that really does tell us how it is.
Researcher Prompt	*Do you think that they should be coming to do revision sessions with you?*
73F	Yes and tell us techniques because they have walked this path already and they can tell us what to do to get good grades.
Researcher Prompt	*And coping techniques at this stages when the exams are approaching?*
Researcher Prompt	*Is there anything else in your lessons that would help you that we don't do now or that you have heard other people do?*
74F	The 'Dice Game' should be compulsory to all lessons because then you know you will get a chance to say what you did in the lesson and our targets for the next lesson so you get a chance to achieve the targets.
75M	I think a plenary should be compulsory so that you can reflect on what you have learnt in the lesson and if you don't understand it you can tell the teacher.
Researcher Prompt	*It keeps you on your toes because the dice may come to you.*
76F	Yes so you always have to have something in your head.
Researcher Prompt	*Is there anything else that you would like to add?*
77M	I think at the end of the lesson we should be told what is coming up in the next lesson so that we get a chance to prepare for it more. Then you can take in the knowledge more.
Researcher Prompt	*By using the learning platform when we get into the new building there is going to be more emphasis put onto this so for example you can look at the next week's schedules and get an*

	insight particularly with sixth form as you will be doing far more reading and it will be more intense.
78F	Teachers have lesson plans it would be good for us to have a lesson plan so that we could research what was going to be done in the lesson.
79F	I think it would increase the pace with less pressure because we would know what is coming and what was going to happen.
80F	And if we didn't understand the next week's lesson we could always ask the teacher before so the pace would increase.
Researcher Prompt	*Excellent, so if you were ill at home you could call the information up.*
81F	Yes you wouldn't be behind then and you wouldn't have to catch up.
Researcher Prompt	*Is there anything else? Thank you. You have been the best group so far. I really appreciate what you have done.*
82F	Thank you for giving us the opportunity to voice our opinions and to be noticed.

Appendix 11 Comparison of 'thinking skills' identified by students in ILT 1 and ILT 2 in relation to 'Was ILT 2 more challenging than ILT1? Explain why.

Analysis of written comments comparing level of challenge in ILT 1 to ILT2 and students' suggestions for further increasing the amount of challenge in ILT2

Question 1: Was ILT 2 more challenging than ILT 1. Explain why.

All students commented that ILT 2 was more challenging than ILT 1. The following reasons were given:

1. We had to design our idea from scratch.
2. We had to think of ways to improve our peers' designs.
3. More thinking needed.
4. Had to design a completely new idea without any guidelines or a brief.
5. The challenge engaged my imagination and inspired detailed thinking and consideration.
6. We had to 'think outside the box' within a short period of time.
7. We had to develop three ideas instead of one but had the benefit of adding to our peers' designs.
8. Having to justify the reasons for choosing a particular design.
9. We had to use more skills e.g. creativity.
10. We had to design and construct an idea and think about the impact it would have on the future: social, environmental and economic.
11. I had to design something new and think of different ideas.
12. I had to consider whether my designs would have a negative or positive impact.
13. I had to compare my ideas with other students' designs and make a final decision on how I wanted my design to look.
14. I had to develop my ideas.
15. I had to think of ideas to develop other students' designs as well as my own.
16. I had to think quickly.
17. It challenged me to be creative and innovative in a short space of time. This was challenging for me as I am not at all creative.
18. I had to think more and in a different way.
19. It was more challenging as we did not have much time to do it.
20. We didn't have many restrictions which made it hard to figure out what to do.
21. It involved more thinking as we had to invent something from scratch.
22. We had to explain and justify each of the decisions we made.
23. It involved lots of different aspects of developing our idea as I had to draw, annotate, explain and justify all in the same task.
24. Adding to another person's design.
25. Was hard as they had good ideas to start with.
26. We engaged with other members of the class to discuss ideas and ask for help
27. It was hard to think of the initial idea as there are so many ideas.
28. It was more challenging because we were not restricted in our creativity.
29. We expanded our knowledge and creativity.
30. We engaged with other members of the group and helped each other with ideas.
31. The task made us think.
32. We were free to do what we wanted without restriction.
33. It was more challenging because I am not very good at thinking of new ideas and creating them.

Appendix 12 Comparison of 'thinking skills' identified by students in ILT1 and ILT2 in relation to 'How could the task be made even more challenging?' (Extracted from Analysis of Thinking Skills Task)

Question 2: How could the task be made even more challenging?

1. We could be put into groups of 4/5 and then combine all of the ideas for a group design.
2. We could create a presentation for an audience.
3. Added incentive.
4. By being in a group we could negotiate and debate to influence the overall design.
5. By developing the idea ourselves and creating several other ideas.
6. Bigger groups to help the fusion of new, innovative ideas.
7. Ask students to consider the ramifications of their ideas.
8. Work independently.
9. Add further detail to our design ideas e.g. costs and specific materials.
10. Make a prototype of the idea.
11. Find out the potential impact of the design on others by conducting a survey and receiving feedback.
12. I would like to annotate my product more.
13. Give us less time.
14. Give a range of ideas and choose the best.
15. More structure to help with the initial idea.
16. Make it a competition to challenge us more – people put in more effort and think harder when they are competing.
17. Allow different directions to develop the idea e.g. put together a full presentation and market the idea to the rest of the class.
18. The teacher could have given us all the same idea to develop and see what different ideas we came up with.
19. Reduce the factors to be considered e.g. just focus on the social impact and go into more detail on that aspect. I would then have had to think deeper and be more original.
20. Each group could have taken one of the issues and then shared ideas with the whole class.
21. Produce a design brief putting in restrictions to ensure a better designed product.

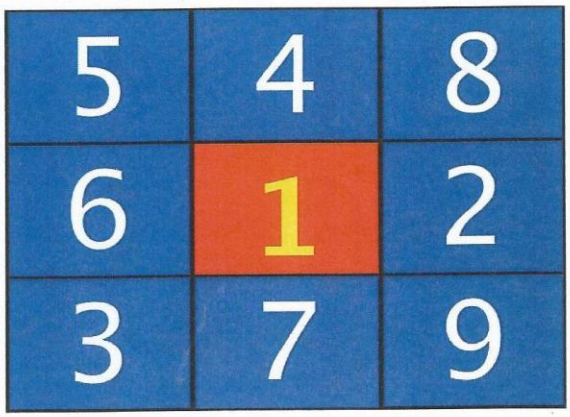
Appendix 13 Transcription of Focus Group discussion relating to comparison of ILT1 and ILT2

	Transcription of Focus Group discussion relating to comparison of ILT 1 & 2
Response Number	Discussion Points/Responses (Year 11 Geography: 10th December 2010)
Researcher Prompt	*Thank you all for agreeing to participate. The first point that I would like you to think about is the more challenging ILT and discuss as a group why you think it was challenging and then debate how ILTs could be made more challenging. Think about ILTs across the Academy and not just Geography.*
1	I think I was required to think outside the box and construct a new idea and weigh up the consequences and the impact.
2	It challenged my imagination.
3	Difficult because we had to adapt each other's ideas and then develop our own after three people had already added to it
Researcher Prompt	*Can I just interject at this point why do you think it was hard to add to other people's ideas?*
4	Because three people had already added to it, it was difficult to then come up with new ideas
Researcher Prompt	*Do think there was scope for you to be really creative and 'think outside the box'?*
5	I was happy to add to it slightly because if I thought 'outside the box' I was worried it may make it too complicated.
Researcher Prompt	*Were you worried it would be too complicated or were you more worried about what other people would think?*
6	People might think it is silly if you think of really weird ideas.
	I didn't want to change people's ideas too much because that is how they wanted it to be.
Researcher Prompt	So, how then are we going to push the boundaries if you are not going to take the 'leap of faith/risk'? What is stopping you taking the risk?
7	The other person because it is their work.
Researcher Prompt	*Do you think there is anything wrong in saying that you really like their idea but would they consider adding the following to it?*
8	No – but if the other person has included everything it may just become a weird design.
Researcher Prompt	There really does appear to be an issue about what other people will think.
9	If we could have just taken one idea, worked independently and then expanded on it.
10	But then I think when you work in groups you get more ideas and it may be more difficult to get ideas when you work independently. If you have more ideas you can be more creative.
11	If we had worked independently we could have gone 'outside the box' with our imagination because it would be our product and other people's opinions wouldn't have mattered.
Researcher Prompt	*Let us think about the ILTs that you get across the Academy. First of all do you think they are challenging enough? You are all shaking your heads – I take that as a 'no'! Tell me then why they are not challenging.*
12	Because we have already done the work in class we are just expanding on it whereas if it was something we hadn't done we would have to use our brain more and go and research it and find out how to do the task.

13	I think Maths homework is challenging because it's not my strongest subject and when they give us A* type questions it challenges me because my predicted grade is a 'B'.
Researcher Prompt	*So you feel challenged because the staff are pushing you beyond your target grades.*
14	In Biology – because we are doing 'A' level tasks and we have to think for ourselves and sometimes need to adapt information from the internet.
Researcher Prompt	Do you think too much information is given to you for your ILT work?
15	Yes in some subjects.
Researcher Prompt	*Is there one subject there really stands out where you do feel you are being challenged?*
16	Science
Researcher Prompt	What lessons then could we learn from Science that other subjects could take on board?
17	Make us research our homework and find out the different aspects of the task.
Researcher Prompt	*So in science they give you the freedom to research and is that what makes the difference? Do you think that is the single most important thing about making your work more challenging?*
18	I think you should be allowed to use your imagination as well.
Researcher Prompt	What about the period of time you are given to do things? Do you think the deadlines are challenging enough?
19	I think if it is more challenging you should be given more time but also need deadlines because it is also challenging when you know it has to be in by a certain date.
Researcher Prompt	*Are there any resources that you feel make ILTs more challenging?*
20	We should all be given revision guides as some groups have them and others don't.
21	Revision guides give different interpretations of information which helps our understanding.
Researcher Prompt	*If you were responsible for setting ILTs what sort of things would you be setting?*
22	Project work
23	I prefer a large homework task spread over two or three weeks
24	I like big projects because you can be more creative whereas if you just have a sheet of questions you have usually already covered the work in lessons and it doesn't benefit you as much.
Researcher Prompt	Is there anything else you can think of that you would like to add?
25	Going through stuff from the start of the year so that you can memorise it
	Exam questions are always good because you can get practice and when it gets to the real exam you will know how to structure your answers – I think it benefits me.
26	I like 'step ups' in Maths. We get a little question at the start of the lesson which takes about 10 minutes and is based on what we did in the last lesson to remind us about what we are doing
Researcher Prompt	Give me an example of a 'step up' then
27	Standard deviation – we were given a piece of paper with a table on it and we had a time limit to complete it
Researcher Prompt	I am getting a message about more creativity, being able to use your imagination more, doing research and perhaps having a longer block of time to do tasks. Thank you very much for your help and I look forward to giving you feedback when I have analysed all of the information collected.

Appendix 14 Challenging ILT used by Year 10 Geography Group

Similarities and Differences Tic, Tac, Toe project



1 = You need to do a presentation that compares and contrasts 3 geographical element of Birmingham and Port Au Prince. The 3 elements are; climate, natural environment and population. You will deliver these presentations to the class.

2 = Interview a range of people about their thoughts and feelings about Port Au Prince.

3 = Collect 3 different articles written about Port Au Prince and write a review on them using at least 3 different thinking hats.

4 = Write a field journal about "your" time as an aid worker in Port Au Prince. What is the atmosphere like, what are doing? Why?

5 = Plan a charity function to raise money for Port Au Prince. You need to write out a menu, provide entertainment and design decorations that are relevant to Port Au Prince.

6 = Imagine you are part of the team re building Port Au Prince. How would you re build it? Design and explain what you would do, make sure you use a map.

7 = Create a revision game for "Similarities and Differences"

8 = Write a poem or create an artistic impression that shows the connections and differences between Birmingham and Port Au Prince.

9 = Produce a leaflet titles "A day in the life ..." This must show differences between your life and a teenager in Port Au Prince.

Appendix 15 Comparing and Contrasting Piaget and Vygotsky (Adapted from Pritchard, 2009)

Vygotsky	**Piaget**	**Staff & Students view**	**My view**
Social Constructivism Learning is a socially mediated activity Emphasis placed on the role of the teacher or 'more knowledgeable other' as a 'scaffolder'. The teacher is a facilitator who provides the challenges that the child needs for achieving more. Development is fostered by collaboration (in the Zone of Proximal Development), and not strictly age related. Development is an internalization of social experience; children can be taught concepts that are just beyond their level of development with appropriate support. 'What the child can do with an adult today, they can do alone tomorrow.	Cognitive Constructivism Children operate as lone scientists. If a child is shown how to do something rather than being encouraged to discover it for themselves, understanding may actually be inhibited. The teacher is the provider of 'artefacts' needed for the child to work with and learn from. Cognitive growth has a biological, age related, developmental basis. Children are unable to extend their cognitive capabilities beyond their stage of development. There is no point in teaching a concept that is beyond their current stage of development.	**Staff** Children need to be given opportunities to work both individually and in groups. Scaffolding is an important factor to ensure there is a degree of structure and guidance in place. An initial stimulus is important but it is equally acceptable to allow children to discover for themselves. **Students** Enjoy opportunities to work independently but in the main prefer to work collaboratively. They enjoy developing their own questions and exploring new avenues.	Social constructivism is key to unlocking a child's potential. Thinking and discussing learning in a group allows children to probe and unpack their understanding, leading to different and more divergent outcomes from tasks. Children are agents of their learning. The teacher should provide the stimulus through carefully designed tasks to scaffold and mediate their learning. Development is supported by allowing a child to push the boundaries and not be constrained by age related stages in their learning. What the child can do with the support of an adult today, can be done alone shortly afterwards but only if the relevant scaffolding is gradually withdrawn.